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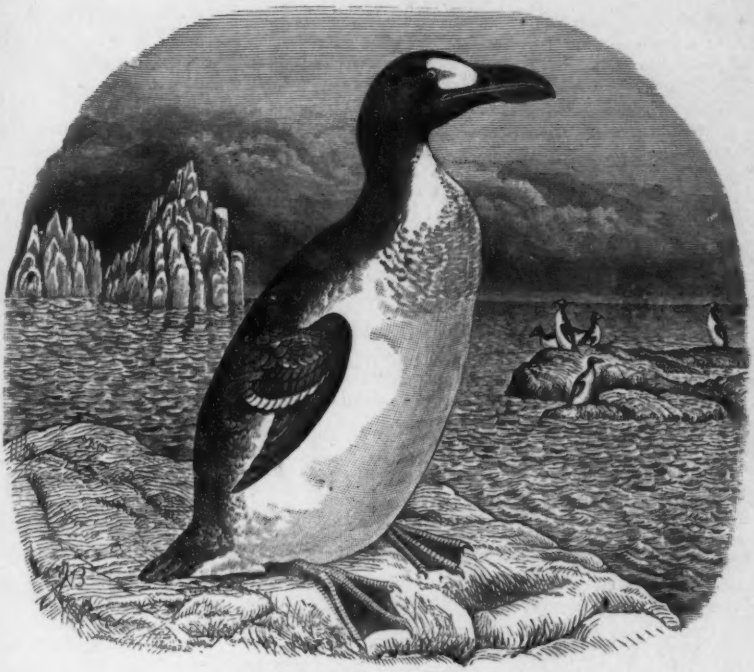

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FISH HAWK'S NEST, PLUM ISLAND, N.Y.

Fish Hawk's Nest, Plum Island, N.Y.

THE AUK:

A QUARTERLY JOURNAL OF ORNITHOLOGY.

VOL. IX. OCTOBER, 1892. No. 4.

BREEDING HABITS OF THE FISH HAWK ON PLUM ISLAND, NEW YORK.

BY CHARLES SLOVER ALLEN.

(*With Plates IV and V.*)

EVEN the wildest and most independent of our feathered friends rarely fail to show a proper appreciation of our demonstrations of kindness and good-will toward them. Wherever thorough protection is afforded to both them and their young during the breeding season their confidence in our good intentions is simply wonderful, and we are trusted as soon as we have conclusively shown ourselves to be worthy of their confidence. They quickly learn when and where safety is to be found and whom to trust or fear. The German Stork is exceedingly wild and cautious in the fields, woods, and along the river marshes, yet confidently builds its nest upon the housetops and churches in the villages and towns, and often struts about the dooryards. In Germany it has taken centuries to bring about this result; but I know of an island, less than one hundred miles from New York, where Fish Hawks, prior to 1885, had been protected for over thirty years, and where they were almost as tame as the German Storks. In this year Plum Island (the island in question) was sold to a syndicate who planned the construction of large hotels and cottages; since then all has completely changed. For about forty years Plum Island had belonged to the Jerome family, and the Fish Hawks had been protected and in every way encouraged to occupy the island as a nesting place.

I paid my first visit to this island home of the Fish Hawks in May, 1879. It was then owned, with the exception of an acre or two around the lighthouse, by Mr. Jerome, then an old man, whose main hobby and object in life seemed to be the protection of his pets and 'mascots,' the Fish Hawks and their nests, even to the extent, it was reported, of using a shot gun or rifle if necessary. He claimed that fully two thousand nightly roosted on the island, and that over five hundred nests had been built there. I finally reduced these numbers one half. At last I won him over, with good cigars, a thorough appreciation of his pets, and various other more powerful arguments, until he finally gave me permission to investigate their nesting habits on his island.

At this time on nearing the island, even while ten or fifteen miles away, one was struck with the number of Fish Hawks that were to be seen on all sides, and they became more and more numerous as the island was approached. All the way down Gardiner's Bay they were seen sailing through the air in every direction, or perched on the stakes of the fish pounds.

The island is three miles long, east and west, narrow and high to the eastward, broadening to the westward, where is a lighthouse on a high bluff or sand cliff. To the south of this a rolling sandy meadow extends for a mile, some parts of which are nearly level and others, especially near the beach, form a series of sand hills. Near the center of the island, to the westward, is a swamp, partly clear water, partly boggy and overgrown with bushes, across which was a much used causeway, called Love Lane. Near the swamp, and almost enclosed by it, was a piece of woodland of perhaps twenty acres in extent. The north shore of the island is high sand cliffs, with great boulders, ten to forty feet high, on the beach and out in the water. The south side is lower.

The first Fish Hawk's nest shown to me by Mr. Jerome was fairly in his dooryard, close by his front gate, and only about fifty yards from his house. It was placed upon an old pile of fence rails, rotted to black mould in the center, but kept up by the yearly addition of fresh rails. Mr. Jerome said that to his knowledge this nest had been occupied every year for forty years. It likewise had been added to yearly until its bulk of sticks, sods, cow dung, decayed wood, seaweed, etc., would amount to at least three cartloads, in addition to what had rotted and fallen to

the ground. The nest was only seven or eight feet from the ground, so that by stepping on a projecting rail I could readily see the three beautifully spotted eggs within, which I promised not to disturb. Mr. Jerome could pass close to the pile of rails without the birds leaving the nest, while I could not get nearer than thirty or forty feet. They would dive down near my head, uttering a shrill cry, and at the same time threateningly stretching out their claws; and while flying nervously about they constantly uttered a sound resembling the call of a young chicken or turkey when lost from its mother. They would alight on the nest again before I was fifty yards away.

Out on the sandy meadow to the southward were what at a distance appeared to be two gigantic mushrooms about seventy-five yards apart. A nearer approach disclosed the fact that they were cedar trees twenty feet high; the trunks were about one foot in diameter and without a limb for the first ten feet. The whole top of each tree was involved in a huge nest. These nests, Mr. Jerome said, had been occupied every year for forty years, each year the Hawks repairing them and adding to their bulk. These nests were so unusually large that they are worthy of description. Each nest involved the whole tree, even to the lowest branches. At the base loose sticks, six to twelve feet in length, were spread out so as to form a projecting platform ten to fifteen feet in diameter, forming complete protection from below. The base of the solid portion of the nest was about eight feet across, sloping up to the level top, which was about four feet across, and very firm and solid, and readily bearing my weight. The bulk of this nest was about equal to three cartloads. The central part of the nest consisted of a mass of sand and decayed matter from the old nests, much of which had fallen through to the ground. The base of the nest consisted of long sticks, oyster stakes, etc., loosely put together and extending beyond the longest limbs of the tree, making it over twelve feet in diameter. Each year for many years the nest had been repaired and built up with every kind of material that had been washed ashore or could be picked up in the fields. The center of the nest, nearly five feet high, was composed of clods and sand and the decayed remains of material added many years before. The sloping edges of the nest showed its composition to be of rough sticks, some of them quite long, rope, barrel staves, pieces of net floats, corks from seines, seaweed, kelp, long

strings of the eggs of the conch, an old rake, a blacking-brush, part of an oar, a toy boat (schooner) foremast and sail with jib still attached; boards from boxes, an old used-up broom, a small board with a fish line wound on it and fish hooks still attached; corn stalks with roots and earth adhering; large masses of sod with *growing* grass as turned up by the plow; many long bones and ribs of sheep and cattle from the hill pastures; large quantities of cow dung, and, strangest of all, bleached skulls of sheep on the top of the nest, apparently placed there, on account of their whiteness, for purpose of ornamentation; a shoe, pieces of sail and clothing, etc.; in short, everything that could be found on the beach, in the fields, or about the dooryard was included. The trees were overweighted and ready to fall, and in 1885 I found both overturned and new nests built upon the old ones that had fallen. (One of these is shown in Plate V.)

The birds were so tame that they would not only alight but settle down on one of the nests while I was examining the other. The parent bird showed little fear and continued to swoop down at me in a menacing way while I was on the top of the nest. The nest proper was about four feet across, nearly level, with a depression in the center six inches in diameter and about three inches deep, lined with seaweed, dry grass, sheep's wool and feathers.

In the wooded part of the island the nests were very numerous, the larger trees in the interior being all occupied, while near the edge of the wood nearly every tree had a nest, and some of them two or three each. On the outer edges of the wood and out in the open land were isolated low scrub-oak and thorn trees, which also were used for nesting sites, the nests in such instances being not over five to ten feet from the ground. Some of them I could see into readily from the ground; and if I waited patiently for half an hour the birds would alight on the nests within thirty feet of me. One of these nests contained an old broken axe which had been noticed by Mr. Franklin Benner two years before, a boot-jack and an old straw hat.

Back of these woods was a sheep barn, on the roof of which, at the south end, was a bulky Fish Hawk's nest, which I examined in 1879. By Mr. Jerome's request it was entirely destroyed in 1881, but I found it rebuilt in 1885. The barn was in constant use. Near it was a small wild cherry tree on which was a small nest. It was occupied each year I saw it.

Out on the sandy plain to the south of the woods, and southeast of the lighthouse, were one hundred or more nests built on the ground. Some were on the tops of the sand hills at the water's edge, others in the valleys or on the ridges. Those on the low ground were usually placed very close to some stake, a dead tree or stump, or even piece of timber from an old wreck. Some of the nests in the valleys were mere depressions in the sand, like a Gull's nest, near a post or stake, with a few feathers or straws in or near it, and a few sticks and bones scattered around. These were new nests. Other old nests on the ground were four to five feet high, having been added to yearly by the birds, and by loose sand blown into them by storms. In some instances the nests had caught the sand year after year, while the sticks, etc., had rotted until there remained apparently simply a cone some three or four feet high, level at the top, which had a breadth of two and a half to three feet, with a depresssion in the center, in which some grass was growing, while sticks, bones, etc., were scattered around its edges. Some of the newer nests were found only by the bird flying up from them as I approached, the nest being merely a small hollow in the sand.

On the north shore, where the beach is strewn with large boulders, nearly every large rock — even some that were far out in the water — was occupied with a small nest. The waves breaking over these rocks during heavy storms, the nests were frequently washed away, thus preventing any large accumulation of materials. In photographing some of these nests I secured a view of one with the bird flying over it, and another view of the same nest when the bird had just alighted on it. This was a large nest, situated on a boulder nearly forty feet high. In both instances the bird came out well in the photograph. It was almost impossible to reach this nest, but I finally succeeded in getting to it, the Hawks meanwhile darting within three or four feet of my head, thrusting out their claws towards me in a threatening manner as they fairly brushed me with their wings. The eggs were found to be protected in a singular manner, being covered and nearly concealed by a Crow's wing, the owner of which had not been killed over forty-eight hours. This nest was out of the reach of the waves and very bulky, with a deep depression in the center. It was comparatively safe from attack from below, but exposed from above. I have no evidence that the Hawks had

killed the Crow and placed the wing in the nest as a warning to the many marauding Crows which visited the island daily to rob the nests of the Night Heron and other birds breeding there. Indeed, I found a few Hawks' nests that had been robbed, but no Crow had molested this one.

In the swamp near the Fish Hawks' nests was a colony of Night Herons, nesting in the smaller trees near the swamp. Almost daily a flock of Crows from Connecticut were accustomed to rob this heronry, covering the ground with the shells of the eggs they had eaten, and occasionally treating a few Fish Hawks' nests in the same way. The Fish Hawks seemed to unjustly accuse the Herons of the robbery, as the Herons were constantly persecuted by the Hawks. Whenever a Heron appeared he was instantly set upon by one or more of them, and the Herons would seek safety in the thick underbrush where the Hawks could not follow them. Herons were killed, however, almost daily by the Hawks.

The lighthouse keeper gave the date of the arrival of the Fish Hawks as early in April, the time varying but a few days from year to year, the males coming first, followed two or three days later by the females. I always found that by June 21 most of the nests had their full complement of eggs, and some sets were more or less incubated. The number in the set varied from one to four, usually numbering two or three, though I once found five. The eggs also vary greatly in color; some are of an almost uniform dark chocolate brown, varying in places to brownish black. In most instances the ground color was a creamy or bluish green, thickly spotted and blotched with various shades of purplish brown and dark chocolate brown, the latter prevailing about the larger end. Certain nests had the local reputation of always having one or more white eggs in them. In 1879 I found a nest in a high oak containing one so-called white egg. In 1881 I found in the same nest two white eggs and one that was beautifully mottled. In each instance the Fish Hawk was found on the nest. I have found nests with one white egg and two of the usual coloration; also one nest (in a tree) where all three eggs were without trace of any markings. The parent bird had been incubating the set for a week and was often seen on the nest. I also bought a set of three unmarked eggs taken from the same nest the previous year.

On approaching some of the nests the old birds silently left them

and did not return till all was quiet, simply soaring high in the air without uttering a sound; in other cases the birds were noisy and combative, constantly darting down at one's head, but they would return to their eggs when I remained quiet, even if only fifty feet away.

The Fish Hawks were not lacking in neighbors willing to share with them their domicile. A pair of Fish Hawks of my acquaintance occupied a nest situated on the bank of a very sluggish stream at the edge of the piece of wood already described, and adjoining a denser thicket to the westward. The nest was old and large, and was probably an inheritance from former generations. It was thoroughly protected from below by the long projecting sticks at the base and the imperviousness of the mass. A pair of Herons, wiser than their kin, built their nest under the Fish Hawk's nest, only some fifteen inches below it, and in a place the Fish Hawks could not possibly reach without tearing away a portion of their own nest. The Heron's nest was thus thoroughly protected from storms and from hostile attack from above. The Fish Hawk's nest contained three eggs, the Heron's four eggs. In the crevices of this same Fish Hawk's nest were five nests of the Purple Grackle, one Wren's nest, and an English Sparrow's nest. Herons are often killed by Fish Hawks, but they could not get at these, and when I robbed the whole series of nests, they all laid again in the same nests and were allowed to raise their young. In fact, the Fish Hawks do not seem to mind being robbed, as they will not desert their nests if allowed to raise their brood during the season. They seemed much bolder in open places and along the rocky shore than in the woods, as in exposed situations they could better see the character of their enemy.

In every Fish Hawk's nest, except those on the ground, I always found from two to eight or ten nests of the Purple Grackle. They were situated in crevices among the sticks under the edges of the nest, or even beneath the nest itself, so as to secure protection from rain and bad weather. They were very bold in collecting fragments from the table of their powerful neighbors. English Sparrows also often bred there, and I have more than once found nests of the House Wren in the deeper interstices.

The two plates accompanying the present article are from photographs selected from a considerable series, taken on the

island, of Fish Hawks' nest and their surroundings. Plate IV represents a nest situated in an old and partly dead oak at the edge of the woods and overhanging a fresh water pond. In taking the picture the camera was hidden near the tree and a long line attached, the exposure being made just as the Hawk had settled upon the dead top of the tree a little above the nest. The birds were comparatively tame, and a number of fairly good photographs were obtained of both nests and birds.

Plate V represents one of the two 'mushroom' nests already described, taken after the great weight of the nest had overturned the tree. The tree fell in October, 1883. The birds rebuilt upon the fallen nest in 1884, and had added to it new materials when again examined in 1885.

As already said, the Fish Hawks were thoroughly at home on the island for a long period prior to the time when the island was sold by Mr. Jerome to the syndicate, and had become very unsuspicious. I have seen them alight on the flagpole and on the fence posts within easy gunshot of the lighthouse; and on two occasions visitors to the lighthouse are said to have killed one of the birds with a stone. As stated above, the nests were placed almost anywhere—on the tops of the highest trees, or on their lowest branches, only five or six feet from the ground; on stunted trees only a few feet in height, on isolated trees far out in the open land, as well as in the woods; on the sheep barn, and on an old pile of rails by the gate of the farm house; while thirty to forty per cent were actually on the ground. These latter varied from a slight depression in the ground, as in the case of newly formed nests, to conical mounds, four or five feet high, formed by materials added year after year by the birds, filled in with sand blown by the winds. High rocks on the shore, and low rocks far out in the water, scarcely above high tide and swept by the autumn storms. were also chosen as situations for nests. A large buoy, with a lattice-work top, near the west end of Fisher's Island, was also occupied for many years by a nest of these birds, greatly to the advantage of sailors and fishermen, who were warned in thick weather of the position of the buoy by the screaming of the Fish Hawks.

The Jeromes, father and sons, rigidly protected the Fish Hawks as long as the island remained in their possession, it being generally understood that any one attempting to rob their

nests did so at the peril of his life. They even destroyed the rookery of Night Herons, because it attracted gunners to the island, to whom a Fish Hawk sailing over often presented a shot too tempting for them to resist. Since the sale of the island, and the removal of protection, the Fish Hawks have for the most part gone elsewhere, few now breeding there. Gardiner's Island, still thoroughly protected, is now their favorite breeding place.

The varied character of the materials used in nest-building has already been mentioned at some length, but I append the following more detailed list, made up from notes taken during my three visits to the island, the objects mentioned having all been personally observed and noted: sticks, branches of trees, from three to five feet long, a few ten to twelve feet long, for protecting the base of the nest; brushwood, barrel staves, barrel heads, and hoops; bunches of seaweed, long masses of kelp, mullein stalks and cornstalks; laths, shingles, small pieces of boards from boxes; parts of oars, a broken boat-hook, tiller of a boat, a small rudder, and parts of life preservers; large pieces of fish nets, cork, and cedar net floats, and pieces of rope, some of them twenty feet in length; charred wood, sticks from hay bales, and short, thick logs of wood; a toy boat, with one sail still attached; sponges, long strings of conch eggs, and eggs of sharks and dogfish; a small axe with broken handle, part of a hay rake, old brooms, an old plane, a feather-duster, a deck swab, a blacking-brush, and a bootjack; a rubber boot, several old shoes, an old pair of trousers, a straw hat, and part of an oil skin 'sou'wester'; a long fish line, with sinkers and hooks attached, wound on a board; old bottles, tin cans, oyster shells, and large periwinkle shells, one rag doll, shells and bright colored stones, a small fruit basket, part of an eel pot, a small worn out door mat; wings of ducks and gulls, sometimes with parts of the skeleton attached, and one fresh crow's wing, as already related. A strange feature was the frequent presence of *bleached bones* from the pasture, as the ribs and long bones of sheep and cattle, and especially *sheep skulls*. Nearly all the old nests had masses of dried cow dung, and large pieces of sod, with the grass still growing.

A PRELIMINARY LIST OF THE BIRDS OF SAN JOSÉ, COSTA RICA.

BY GEORGE K. CHERRIE.

(*Concluded from p. 251.*)

94. **Milvulus tirannus.**—At a slightly lower altitude it nests abundantly. A nest with three fresh eggs taken by Don Anastasio Alfaro at Tambor, Alajuela, May 2, 1889, was placed in a small tree, about ten feet from the ground. The parent bird left the nest only very reluctantly and not until almost within the grasp of the collector. The nest is constructed of a mixture of small dry grass and weed stems and soft dry grass rather compactly woven together, with a lining of a few fine rootlets. It measures outside 5 inches in diameter by 2¾ deep, inside 2¼ in diameter by 2¼ deep. The eggs are white, sparsely spotted and blotched, chiefly about the larger end, with chestnut of slightly varying shades. In form the eggs are ovate, and they measure .66 × .88, .65 × 88, and .63 × .89 inch.

95. **Tityra personata.**—From time to time found about San José, its presence or absence being due to the ripening of certain fruits. My observations have been that the bird feeds chiefly on fruits. The species is found on both coasts, and in the interior up to an altitude of 6000 feet.

Young males resemble the females.

My observations are at variance with those of Mr. Salmon, in regard to the color of the egg being white, as given by Salvin and Godman in their 'Biologia Centrali-Americana.' March 22, 1892, I found a nest of this species at Terraba (southwestern Costa Rica), containing one egg; the bird was shot and a second egg badly broken removed from the oviduct. In these the ground color is a dark pinkish buff; the ground color is almost completely hidden by irregular markings, lines, and blotches, of chestnut brown, these blotches darkest and most abundant about the larger end. The eggs measure 1.16 × .83 inch. The nest was probably a deserted Woodpecker hole, and was situated about six feet from the ground in an old stump. The bottom of the nest was about ten inches below the opening. It was without any lining whatever. However, I saw a second pair of birds carrying nesting material into a hole in another tree.

96. **Chiroxiphia linearis.**—A rare straggler at San José. Tolerably common on the Pacific slope clear to the coast. Young birds resemble the adult female.

97. **Momotus lessoni.**—Common resident. The nests are built in the ground, some bank, like the side of a stream, being selected. The entrance tunnel extends back horizontally sometimes for a distance of six feet. At about half its length there is a sharp bend upward for some six inches, then the course is again horizontal as far as the chamber occupied by the nest. The nest space is twelve or fourteen inches in diameter, being round, and about six inches high with level floor and ceiling. A few

rather coarse dry twigs are strewn over the floor. The eggs I am not acquainted with. Mr. José C. Zeledon, to whom I am indebted for the above notes, also tells me that if one of these nests be opened at about the time the young are ready to leave the nest, it is found to be one of the dirtiest, foul smelling places that can well be imagined. The young birds occupy the centre of the nest, while all about them and especially at the sides of the opening are piles of the excrement mixed with the pellets, composed of the hard chitinous parts of beetles and other insects composing the chief food of the 'Bobos,' that are ejected from the mouth. This mass is reeking with maggots.

At the time the young leave the nest they are able to fly pretty well. They have the same colors as the adults. But the bill is much shorter, more depressed, and the edges without the serration seen in the adults. The tail is shorter than the wings and nearly square. The eye is sepia brown, not chestnut as in the old bird.

On the 8th of May, 1889, I bought four live young birds, the pin feathers not yet concealed and the eye light sepia brown. By the 25th of the same month the iris had changed to a decided chestnut shade, they were fully feathered and the tail of one of the birds measured 3.55 inches. On the 28th the birds commenced imitating the notes of the adults; their eyes had become bright chestnut. With the first utterances of the notes of the adults the peculiar jerky motions of the tail commenced. It was most amusing to watch the four birds sitting in a row together, almost motionless, only giving the tail first a jerk to this side, then to that, now up, and now down, to see it held for the space of a couple of minutes almost at right angles to the body, and then go with a whisk to the other side, the birds all the time uttering their peculiar cooing notes.

May 30, I measured the tail of one of the birds and found it to be 4.25 inches, an increase of .70 inch in five days. I fed the birds on raw meat, and about this time they began to fight vigorously for their shares. If two happened to get hold of the same piece, neither was willing to let go and each would close its eyes and hang on for dear life, both squealing as hard as they could. June 3, the serration of the bill began to show. June 16, the tails were apparently fully grown, and the birds began to tear at the webs at the points of the middle pair of feathers. By the 1st of July the tail-feathers were fully trimmed. My Bobos are often restless at night. Frequently, when at work in the museum until eleven or twelve at night, I have heard them jumping about in their cage and answering to each other's notes.

On one occasion I found the stomach of a bird I had shot filled with snails of a species having a delicate, easily crushed shell. The birds I have in confinement greedily eat earth worms. And one day when I had placed a small live Warbler in the cage, I returned in about half an hour's time and found the feet and tail of my Warbler protruding from the mouth of one of the Bobos!

98. **Ceryle cabanisi.** — Tolerably common resident. The Costaricans call them 'Correo de Agua.' I have not succeeded in finding the nest.

Young birds differ but slightly from the adults; in young males the brown band across the chest is but ill defined. The species is found on both coasts and to an altitude of 8000 feet.

99. **Chordeiles texensis.** — I have never met with the species myself. There are, however, two examples in the collection of the Museo Nacional. Both were collected at San José by Sr. Don Anastasio Alfaro, the first (a male) Nov. 6, and the second (a female) Nov. 7, 1888.

100. **Nyctidromus albicollis.** — Abundant resident, found from an altitude of about 8000 feet down to both coasts. Known here by the name 'Cuyéo.'

'There are many superstitions, current among the country people, regarding the Cuyeo. For example, it is a very bad omen to have the Cuyeo cross your path in the evening. And foolish indeed would be he rash enough to shoot at this agent for working untold evil; fortunate might he consider himself did he escape with no greater mishap than the breaking or twisting of his gun barrel! Yet in spite of all evils attributed to the bird, *if* one can be secured its happy posessor is overjoyed with the consciousness of holding the wherewithal to work a charm infallible—to bind, with cords as true as steel, heart the most fickle, change coldest disregard into fond caressing. To work this miracle the heart is removed and dried over a slow fire until it may be crushed into a powder. The body of the bird is buried for a time sufficiently long for the soft parts to decay. Then the bones are carefully collected together, washed, dried, tied into a bundle, and carried in the pocket. All is now ready. The object of the lover's fancy is invited to a drink. A little of the powdered heart is secretly sprinkled in the liquor. Once drunk, the fires of love begin to burn!

The heart of the Cuyeo, dried, and bones of the Lechusa (Owl), carried in the pocket give one success in love affairs. But the philter that "is absolutely certain" in its working is composed of a powder made from the dried hearts of the Cuyeo, Lechusa, and Gorrion (Hummingbird).

101. **Chætura brunneitorques.** — Resident about San José, but not common.

102. **Cypseloides niger.** — There is a single specimen in the Museo Nacional collection, taken at San José by Mr. J. C. Zeledon. There is a note on the back of the label stating that the bird was breeding.

103. **Campylopterus hemileucurus.** — Rare visitant about San José. Tolerably common at a little lower altitude.

104. **Floricola longirostris.** — I took a single specimen Sept. 16, 1891.

105. **Floricola constanti?**—A rather common resident. In the ten examples before me all have the chin blackish and the throat metallic crimson with the feathers tipped with gray. This character, according to Elliot's 'Synopsis,' belongs to *F. leocadiæ*, and not to *constanti*, the form supposed to be found in Costa Rica.

106. **Trochilus colubris.**—Very rare visitant at San José.

107. **Lophornis adorabilis.** Mr. J. C. Zeledon took a single example at San José. The bird is tolerably common in the open prairie country about Boruca in southwest Costa Rica.

108. **Amazilia fuscicaudata.**—The most abundant species about San José, and indeed the most abundant species found on either coast and up to an altitude of about 6000 feet. I believe that this species is nesting in every month in the year. Nests are usually placed about fifteen feet from the ground in either orange or lemon trees. A nest before me is constructed of some soft fibre much resembling hemp tow. There are a few lichens covering the outside, and an inner lining of a little native cotton. The nest, somewhat eliptical in form, measured 1½ inches deep, by 2 inches long, and 1½ wide. Inside 1¼ by ⅞, by ½ deep. The two eggs, white in color and eliptical ovate in form, measure .53 × .37 inch.

109. **Amazilia sophiæ.**—Tolerably common resident.

110. **Chlorostilbon salvini.**—Tolerably common resident.

111. **Chlorostilbon angustipennis.**—Resident. Not common.

112. **Crotophaga sulcirostris.**—The 'Tijo' of the Costaricans is one of the most abundant birds found in the country, ranging, as it does, from both coasts to an altitude of about 7000 feet.

Mr. Alfaro has kindly given me his manuscript notes on the nesting of this species, which I have translated from the Spanish and present below.

"The Zopilotillo [so-pee-lo-tée-yo], also known as 'Tijo, tijo' [tée-ho] in imitation of its peculiar notes which seem to repeat the word *tijo* over and over again, is very abundant in the fields near Tambor (a little town about twenty miles northwest of San José) where along the hedgerows and in the scrubby timber, as well as on the skin of the cattle they find those insects which constitute their food. The woodticks, or garropatos, from the legs and about the head and neck of the cattle are esteemed above all else a favorite morsel. In this locality I have collected three nests during the month of May, the first with nine eggs, the second with eleven, and the last with thirteen. Some years ago I remember seeing a nest, situated in the branches of a mango tree, that contained fourteen eggs.

"The nests that I have collected agree with the observations made by Zeledon. The structure is voluminous, composed chiefly of coarse dead twigs, but presents one peculiarity not observed in any other bird, namely the nest being lined with fresh green leaves. My three specimens were all placed in low trees, and neither was found at a greater height than three metres. One had been built above an old nest of one of the larger Tyrannidæ.

"It will not be without interest, I think, to insert my observations relative to one of these nests. On the 20th of May I noticed a Zopilotillo with a dry stick in its bill, which was immediately carried to a point in the hedgerow where it was deposited with three others. After assuring myself that the bird was building its nest there, I retired, with the intention of returning at a more opportune moment. And when one week later I returned to the same spot, what was my surprise to see not only the nest completed and containing six eggs, but more than this: in the thorns and leaves about it were scattered seven more egg! As a consequence, if that collection was not the work of the Zopilotillos collectively,

the poor owner, would have had to deposit three eggs daily! In the finding of some of the eggs scattered in the leaves was revealed one of the architect's peculiarities. A hole had been left in the centre of the nest and only recently filled with leaves whose fresh green color testified that they had been cut and placed there later than the others forming the carpeting to the bottom of this common incubator.

"The eggs were all fresh, the six occupying the nest having the characteristic rough white calcacerous surface perfectly clean and without the slightest variation in color. Not so with the eggs found about the outside of the nest. Those found in contact with the leaves had taken on a dirty yellowish tinge. Those held suspended among the leaves and thorns showed various spots and lines of the lustrous blue color forming the base for the chalky external coat. The scratches had been caused by a too close contact with the thorns. In form the eggs vary from an oval to an eliptical oval; while the following dimensions taken from various eggs of the set will serve to give an approximate idea of the great variation in size: 35 × 25, 32 × 26, 32 × 23, 30 × 25, and 29 × 23 mm."

113. **Diplopterus nævius.**—A rare straggler at San José. Tolerably common at lower altitudes and as far as the coast on the Pacific side. Young birds do not differ from the adults, young males resembling adult males, and young females resembling adult females.

114. **Piaya cayana mehleri.**—An abundant species, found on both coasts and in the interior to an altitude of about 6500 feet.

Young birds resemble the adults.

From Señor Alfaro's manuscript I take the following notes regarding this bird: "The Pajaro Ardilla [squirrel bird], like *Crotophaga sulcirostris*, according to Zeledon is insectivorous, and is found in all parts of the country. It is so arrogant and confident in its habits as to have merited the not over flattering name of 'bobo' [fool]. Its cinnamon color and long tail, together with the habit it has at times of running along the branches, gives it a certain resemblance to a squirrel that justifies the application of the more common vernacular name. Like the Zopilotillo's the nest of this species is built in low trees, is very bulky, and has but little of the artistic about it.

"On the 28th of May while searching about in some scraggy timber along the banks of the Rio de Poas I found a nest of this bird. When discovered, the female was on the nest, but she immediately deserted her post, not, however, going so far that she could not watch our movements, a precaution on her part that assisted in the collecting, in order to determine the sex, after assuring myself that the nest contained eggs.

"The nest was placed about nine feet from the ground in the branches of a small tree, and was well concealed by the broad leaves of some climbing plant. In its construction there was employed nothing but half decayed leaves, making its removal and preservation impossible. The two eggs, which were fresh, are an opaque white, without markings, eliptical oval in form, and measure 35 × 24 and 33 × 24 mm."

115. **Coccyzus minor.**—Very rare about San José. Found on both

coasts. Birds from the Atlantic coast seem to be decidedly the darkest (rather a dark buff below), those from the Pacific coast considerably paler, while specimens from the interior are palest.

116. **Coccyzus americanus.**— I have taken three examples at San José, all females, on Sept. 10, Sept. 28, and Oct. 20, 1890.

117. **Coccyzus erythrophthalmus.**— I took a specimen in San José, Oct. 1, 1890. It is found, as well, on both coasts, but is very rare.

118. **Campephilus guatemalensis.** — Accidental at San José, but common on both the Atlantic and Pacific slopes down to the coast line.

119. **Dryobates jardinii.**—I include this bird in the list with some doubts. In the collection of the Museo Nacional there is a series of forty-six specimens, all, with the exception of four examples labeled as from San José, coming from a much higher altitude.

120. **Centurus hoffmanni.**—Tolerably common resident. Found on both coasts, and in the interior to an altitude of 6,500 feet.

May 12, 1889, I found a nest of this species about 25 feet from the ground in an old rotten snag. This nest contained two fresh eggs. May 26, 1889, I found a second nest containing three fresh eggs. This nest was only about three feet above the ground, in an old stump. It was one foot deep and the entrance opening was two inches in diameter. There was no lining. The male was on the nest when found, and was shot, but the female was not seen. The eggs are eliptical ovate in form, glossy white, and measure 1.02 × .70, 1.03 × .70, and 1.04 × .71 inch.

121. **Conurus petzii.**—Irregular visitant about San José. Most commonly met with during the months of May and August.

122. **Conurus finschi.**—Rare straggler about San José.

123. **Strix pratincola guatemalæ.**—Tolerably common resident.

124. **Syrnium virgatum.**—Tolerably common resident. Nesting probably begins in the latter part of April, as young birds are found by the first of June.

125. **Megascops brasilianus.**—Tolerably common resident.

126. **Megascops nudipes.**—Very rare. Usually found at a higher altitude.

127. **Lophostrix stricklandi.**—Rather rare resident.

128. **Glaucidium phalænoides.**—Tolerably common resident. This species seems to be as much awake as any other bird during the daylight. Frequently in the middle of the day I have found individuals perched in the branches of some dead tree, in the full glare of the sun, and at such times they are very alert. As soon as one appears in sight they commence their peculiar jerky motion of the tail, and usually fly before one is within range. Not infrequently I have noticed this species perched very much after the manner of a Woodpecker. Ordinarily the food consists of insects, but I shot one specimen having the stomach full of the remains of some small bird.

129. **Falco albigularis.**—A straggler at San José, and, as far as I am aware, found only on the Pacific slope. August 10, 1890, I took a young male at San José. There were the remains of a bird in the stomach.

130. **Falco columbarius.**—Dec. 4, 1890, Sr. Don Manuel Carranza brought a fine example to the museum. This is the only specimen I have seen in Costa Rica.

131. **Falco sparverius.**—In no part of the country is this Hawk resident, although on the coasts it is not absent for more than four months of the year. At San José it is met with from the first of October until the last of February. The females predominate very greatly in numbers. In the series of forty-one specimens belonging to the collection of the museum there are eight males and thirty-three females. The head of one of the males (Cartago, March, 1886) is without any sign of the rusty crown patch; the under parts are very pale, buffy, ochraceous; the spots, of a rounded form, cover the entire chest. The remaining seven specimens all show the rusty crown patch more or less well defined. In all of these the spotting of the lower parts extends to the front of the chest, but in these the spots are linear, only varying very much in size and in number in the different specimens.

132. **Polyborus cheriway.**—Rather rare about San José. When seen, usually in company with the Black Vultures.

133. **Circus hudsonius.**—Tolerably common from the first of October until the end of February.

134. **Accipiter bicolor.**—There are three specimens in the museum collection that were taken at San José.

135. **Accipiter velox.** There is a single specimen in the museum collection, taken at San José, Jan. 8, 1884.

136. **Spizaëtus ornatus.**—Occasionally met with at San José.

137. **Thrasaëtus harpyia.**—A. von Frantzius in his list of birds of Costa Rica mentions a specimen taken near San José.

138. **Urubitinga anthracina.**—A specimen was shot just north of San José on Nov. 29, 1890.

139. **Urubitinga urubitinga ridgwayi.**—A rare straggler about San José.

140. **Rupornis ruficauda.**—Not common at San José, but from a slightly lower altitude down to the Pacific coast very common. Not found on the Atlantic side.

141. **Parabuteo unicinctus harrisi.**—There is one specimen belonging to the museum collection that was taken at San José.

142. **Buteo swainsoni.**—Seen occasionally from the first of November until February 25.

143. **Buteo latissimus.**—Noted from the last of November until the first of May.

144. **Buteo brachyurus.**—Sept. 10, 1888, Senor Alfaro collected a fine male of this species at San José.

145. **Catharista atrata.**—Abundant resident, not only at San José, but in all parts of the country.

146. **Cathartes aura.**—Not common, and only single individuals seen, always in company with the Black Vultures.

147. **Columba albilinea.**—Rare about San José. At a slightly higher altitude abundant. Not uncommon at an altitude of 13,000 feet, at the very top of the volcano of Irazu.

148. **Engyptila verreauxi.**—Tolerably common resident.

149. **Peristera cinerea.**—Tolerably common resident.

150. **Columbigallina passerina.**—Common resident.

151. **Zenaidura macroura.**—Seems to be resident, as specimens are taken every month in the year. Not having found either the nest or young birds, I do not know whether it breeds here or not.

152. **Colinus leylandi.**—Common resident.

153. **Charadrius dominicus.**—Never common at San José, but a few are seen from October 20 until December 15.

154. **Ægialitis vocifera.**—Common at San José from about Oct. 15 until March 15.

155. **Gallinago delicata.**—Not uncommon from the first of October until February 15.

156. **Totanus solitarius.**—Tolerably common from the first of September until the first of May, and I believe there are some individuals that remain all the year.

157. **Actitis macularia.**—Common from about Sept. 1 until March 1. A few individuals remain all the year and breed.

158. **Bartramia longicauda.**—Tolerably common from about Sept. 5 until November 14.

159. **Tringa maculata.**—Arrives and disappears with the Bartramian Sandpiper.

160. **Tryngites subruficollis.**—Arrives and disappears in company with the two preceding species.

161. **Ardea egretta.**—Sometimes seen about San José toward the end of the rainy season and the beginning of the dry season, that is between November and January inclusive. At a lower altitude it is resident.

162. **Ardea herodias.**—As with the preceding species, seen occasionally from November to January.

163. **Ardea cœrulea.**—Not rare during December and January; however, only birds of the year are met with at San José.

164. **Ardea virescens.**—Tolerably common resident at San José.

165. **Nycticorax violaceus.**—Resident about San José. Adult birds, however, are seldom seen.

166. **Porzana carolina.**—Mr. J. C. Zeledon secured an example at San José in 1881.

167. **Anas discors.**—I saw a Blue-winged Teal just south of San José on Oct. 27, 1889.

HABITS OF THE OLDSQUAW (*CLANGULA HYEMALIS*) IN NEW ENGLAND.

BY GEORGE H. MACKAY.

THIS sprightly little salt water Duck frequents the New England coast during the colder half of the year, where it is well known under the cognomens of Oldsquaw, Oldwife, and Quandy. It is the swiftest flying as well as the noisest (in the spring) of all the sea fowl which tarry with us. While flying, their wings are moved with such short and rapid strokes that it is difficult to follow the movement with the eye. As a result they pass from one place to another in an incredibly short time, especially if flying with the wind; and even when flying against it, I have found it necessary when shooting to make an allowance of six to eight feet ahead and two feet over them in order to land my charge of shot in a passing flock at fifty yards, which serves as an illustration of the rapidity of their movement under such conditions. Their flight is frequently uneven, being on an upward and then on a downward plane, and as a rule near the water, generally dodging when a shot is fired at them.

In the spring as flocks flew past my boat, I have often been much interested and amused at their scolding or talking, if I may so designate their curious notes, *o-onc-o-onc-ough-egh-ough-egh*. In calm warm mornings in April and May I have often seen them playing together, rushing at each other half out and half under water, and so vigorously engaged as to cause the water to fly in every direction. When wounded, they are most difficult to capture and extremely tenacious of life, diving at the flash of a gun, skulking with body submerged and head and neck extended and level with the surface of the water, and displaying an endurance almost incredible. When shot at while flying, although unhurt, they will occasionally dive from the wing; if wing-broken, they will frequently do so. An attempt to retrieve them under such conditions is usually unsuccessful, and if it is a male bird and the long tail feathers are perceived to be erected as it sits on the water, prepare for a long and doubtful chase, for such birds will turn around while under water and swim in an opposite direction, and have recourse to every stratagem to escape capture.

It is the current belief that these birds, as also the Scoters, Eiders, and other similar diving birds, can escape a charge of shot fired at them by diving before it reaches them; this is only partially true, and applies only to distances over twenty yards. I have never yet seen one quick enough to get under water at that distance or less without getting hit, even if the bird was on the alert. I have reached this conclusion after a long experience in capturing wounded birds.

In the autumn Oldsquaws appear about the middle of October, and occasionally a little earlier; but generally it is not until there has been a hard frost that they appear in numbers. The first arrivals as a rule are gentle and tame, and easily approached. I think these birds migrate mostly by night, as I have not heard of many such flocks being seen in the daytime. I personally have noticed only an occasional one. At such times they were flying very high, the flocks numbering about seventy-five to one hundred birds. On reaching a locality where they desire to remain, they circle around three or four times before alighting, after which they remain together for an hour or so, and then break up into groups of a dozen or more. These Ducks have a habit of towering both in the spring and in the autumn, usually in the afternoon, collecting in mild weather in large flocks if undisturbed, and going up in circles so high as to be scarcely discernible, often coming down with a rush and great velocity, a portion of the flock scattering and coming down in a zigzag course similar to the Scoters when whistled down. The noise of their wings can be heard for a great distance under such conditions. In one such instance at Ipswich Bay, Mass., a flock of several hundred went up twice within an hour. A somewhat similar occurrence took place at Wood Island, near Saco Beach, Maine. Also at Scarborough, Maine, on May 1 a flock of several hundred birds went up in circles out of sight in this manner at 11 A.M., and remained away until afternoon when they returned to the same locality in the neighborhood of the beach, coming with a perfect rush. All of the above places used to be favorite resorts of these birds, as was Coccles Harbor, Shelter Island, Long Island, N. Y. Another resort is near Long Beach Point, Orient, Long Island, N. Y. At Biddeford, Maine, where they are abundant in May, certain tides carry them during the night to the westward near Old Orchard. This necessitates their flying back the next morn-

ing towards the east to their feeding ground in Saco Bay. This movement is taken advantage of by sportsmen who, by locating in their 'fly line,' frequently secure considerable numbers of them. In 1886 they were unusually abundant in October off Revere Beach, Mass., there being one or more acres of them. The probable reason for this was to be found in the abundance of the short razor-shell-fish (*Siliqua costata* Say) which seems to appear in this locality about every third year.

Let me transport my readers, if I may, to a spot where I was but a short time since; it is one that is in accord with what I most enjoy. It is here that you can see (under favorable conditions) more Oldsquaws than you supposed existed in New England waters; and on such a morning as I will select for two hours such a continued stream of bird life shall pass that you will be more than satisfied. Close to your feet as you lie ensconced in a sand-built stand, as near the wash as prudence permits, roll in the mighty waves of the broad Atlantic; in front is the battle ground of the tides and winds. We are at the opening at Smith's Point (Nantucket Island, Mass.) on the brink of which we stand. Yet watch how gracefully and easily, regardless of winds or waves, the Oldsquaws, those little flashes of light, for such they truly seem to be as the morning sun shines on them, pass us with gauged flight just above the turbulent waves, now up now down, and then beyond. If you would shoot them as they pass, note well their rate of speed and make due allowance, at least eight feet ahead, and two feet over is not too much, for they are flying swiftly and are farther than they seem; with nine tenths of those missed the shot fall behind. It is the acme of skill in wild fowl shooting to take them singly or in pairs as they pass, but take my word for it, one must have the taste inborn, and serve a long apprenticeship before success can be attained. Do not let us, however, forget those Oldsquaws, shot early in the morning, which were rapidly carried by the tide from our view through those seething waters, and apparently lost; some of them will meet an eddy which will carry them sufficiently out of the current to give the wind and waves an opportunity to cast them on the shore from half a mile to a mile below us. We must be on the lookout, for there are other eyes, sharper than ours, on the watch for them also, I mean the Herring and Great Black-backed Gulls, and the Crows; they are all of them fond of Ducks to eat,

and you will be surprised to learn, if you have not had the experience, how little time is requisite for them to tear open the breast of a Duck where the neck joins the body, and strip off every particle of flesh to the bone.

Off the south side of Nantucket Island the Oldsquaws collect in countless myriads. On Feb. 19, 1891, I saw a flock of Oldsquaws estimated to contain two thousand birds off the south shore of Nantucket about five miles from the island, and I know of no better place to observe them in numbers. They arrive about the third to the last week in October according to the weather, and remain until the latter part of November; most of them then move further south. The height of their abundance is the first half of November. They congregate on 'Old Man's Rip' and on 'Miacomet Rip,' shoal ground two to three miles from the south shore of the island, the water there being three to four fathoms deep. Here they live in security, with an abundance of food, during the day. About three o'clock P.M. they commence to leave this place for the Sound (the movement continuing until after dark) where they regularly roost, flying around that part of the island which affords them at the time the greatest shelter from the wind, returning on the following morning to their feeding ground by whichever route is the most favorable. An examination of the stomachs of some of those Oldsquaws which I shot in the early morning coming from the Sound, showed them to be empty. I think occasionally on clear calm nights they remain on their feeding grounds, and do not go into the Sound to roost. They apparently prefer to feed in water not more than three to four fathoms deep or shallower, unless compelled in order to obtain food. I have noticed north of Cape Cod during the winter months that some Oldsquaws will feed and remain just back of the line of breakers on the beaches, and also around the rocks, but generally they are in small and detached groups of but few individuals.

Oldsquaws do not seem to be at all particular in regard to their food, eating quite a variety, among which are the following. A little shell fish, very small, resembling a diminutive quahog (*Venus mercenaria*), but not one; sand fleas; short razor shells (*Siliqua costata*); fresh water clams; small white perch; small catfish; penny shells (*Astarte castanea*); red whale bait (brit); shrimps; mussels; small blue-claw crabs; and pond grass.

In the spring Oldsquaws appear early in April, that is those which have wintered farther south. There are more or less of them which live on our coast during the entire winter. They remain until the middle of May, a very few sometimes as late as June 17, which is the latest record I have known. The extraordinary difference between their plumage at this season (I have seen this change half completed by April 18) and during the winter has been so often remarked and described that it is unnecessary to make particular mention of it here. The females are a little smaller than the males, and have no long tail feathers. The young males resemble the female in their winter plumage, having no long tail feathers or elongated scapulars the first year. I do not think they attain their full plumage before the second or third year, and I lean to the longer time, judging from the diversity of immature plumage.

Oldsquaws have a manner of alighting peculiar to themselves, suddenly dropping into the water from the wing with a splash which enables one to identify them when too distant to be seen distinctly. These Ducks like the American Eider (*S. dresseri*) avoid passing over shoals or sand spits when the sea is breaking sufficiently to make white water, preferring to pass around or on one side of them. I have remarked that these Ducks prefer to keep entirely by themselves, rarely mixing with other kinds, the American Eider (*Somateria dresseri*) being the only one I have ever known to be with them, and then only an occasional bird, whose abilities were apparently being taxed, when flying, to keep up with its little companions.

Although, as their Latin name expresses, they are particularly a cold weather bird, it is a matter of interest that Ducks with such Arctic proclivities should find the effects of the climate so rigorous at times on the New England coast that they are unable to sustain life and are in consequence obliged to succumb. Yet such is the case. It was during the winter of 1888, when, standing on the high land of Nantucket Island and looking seaward in any direction, nothing but ice was visible; for a month the harbor was closed and there was sleighing on it. There was no open water in sight except an occasional crack in the ice caused by the change of tides; most of the seafowl had left this locality during the early stage of the severely cold weather. Many Oldsquaws remained, however, until they

were incapacitated through lack of food and consequent loss of strength from doing so. As a result it was a common occurrence to find them lying around dead or dying on the shore. Those that were alive were so weak they could not fly, and on examination proved to be nothing literally but skin and bone, others apparently had starved to death. Those found were always females or young males which, like the females and young of the Black Duck (*Anas obscura*) and the American Goldeneye (*Glaucionetta clangula americana*), are unable to endure as much hardship as the adult males, they generally being the first to succumb, while the adult males, when shot under similar conditions were found on examination to be in fairly good condition and not so emaciated. During the above-mentioned winter on a certain occasion the tide caused a crack in the ice adjacent to the jetty on the north shore of the island of Nantucket, leaving a small surface of open water which was soon crowded with half starved Oldsquaws in quest of anything which might sustain life. This collection of Ducks was noticed by two men who planned to capture them in a rather novel way. Having walked out on the ice to the spot, each being provided with a sheet and a fishing pole, they drove out the Ducks; and wrapping themselves in their sheets they lay down on the ice beside the crack. As soon as the Ducks had returned in sufficient numbers, which they did almost immediately, they jumped up and with their fishing poles beat down as many as came within reach, repeating the operation a number of times till they had secured about sixty in a little over an hour, when they desisted, repeating the operation on the following day with a like result. They found, however, on examination that the Ducks were valueless except for their feathers owing to their emaciated condition. It would also appear that even these Ducks, boreal as they are in their habits, cannot endure the porridge ice which forms at times in these waters, for they are frequently found under similar conditions on the shores in other winters than the one above described. They apparently must have considerable open water in order to exist. It was during the early part of the severe winter of 1888 that many Oldsquaws sought the land. Alighting on the uplands adjacent to the north shore of the island, they came in flocks of a hundred or less, in order that they might obtain and eat the dried fine top grass (*Anthoxanthum odoratum*) which grows wild there;

when engaged in plucking it their movements while on the ground were far from awkward, in fact rather graceful, as they ran quickly about gathering the grass some of which was still in their mouths when shot.

Although the Oldsquaw is generally conceded to be a salt water Duck, they will like some others of similar habits frequent fresh water ponds which are near the shore, as also the large inland lakes. Such was the case to a greater extent than I have ever heard of or known before during the latter part of the winter of 1892. In the month of March they accumulated in numbers in most of the larger ponds on Nantucket Island, and in two instances several frequented very small ponds near the shore. In the Long Pond there were eight hundred (estimated) birds living, also a large number in the Hummuck and Miacomet Ponds. Their habit was to fly into the ponds very early in the morning, and fly out about sunset to roost in the sound, or on the ocean. As late as May 1 I saw several flocks of them, aggregating about one hundred, still living in the above ponds. So accustomed had they become to them that it was next to impossible to drive them out, although frequently shot at. Such unwillingness to leave is shared by all such sea fowl after they have once become attached to such places. In this vicinity it would seem that they first seek the ponds for shelter during severe and stormy weather, and becoming accustomed to them, continue to frequent them if plenty of food can be obtained. In those ponds most frequented by them on Nantucket Island two kinds of grass grow beneath the surface, both of which these birds eat. The leaf of one of these resembles myrtle ivy, and the other a little pine tree spread. They also find the freshwater clam, those about the size of a quarter of a dollar and smaller being selected.

Of the Oldsquaws I noticed living in these ponds on May 1, 1892, I remarked most of them had not turned into the black plumage to any great extent, yet on April 18, 1892, of three I shot, an adult male and female, and a young male, the two former were to a great extent turned at that date. The natural inference is that such moult is irregular, and may cover more or less time, each bird being as it were a rule unto itself.

As an instance (which occurred in the spring) showing the attachment of the female for the male (in my experience, most unusual) I relate an occasion when a female Oldsquaw returned four

times to her dead mate which had been shot, before finally being killed herself; during this time she alighted a little distance away and, swimming up to the dead male, kept continually honking and calling to him. As there were at the time several flocks of these Ducks not far distant, resting on the water, and as in flying about she had passed quite close to them, she might have joined them had she been so disposed, but she would not. The incident stands out alone in my experience, a most unusual exhibition of attachment on the part of the female for the male, it almost invariably being the other way with sea fowl.

Oldsquaws are also very numerous in October in some of the great inland lakes (Ontario). I have also a record of shooting five from a flock of six on October 24, 1869, at Missisquoi Bay, Lake Champlain, Vermont, near the boundary line of Canada.

LIST OF BIRDS OBSERVED IN THE VICINITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS.

BY H. P. ATTWATER.

[*Concluded from p. 238.*]

118. **Spinus tristis.** AMERICAN GOLDFINCH.—Common migrant, and winter resident.

119. **Spinus psaltria arizonæ.** ARIZONA GOLDFINCH.—Rare migrant and winter resident.

120. **Spinus psaltria mexicanus.** MEXICAN GOLDFINCH.—Rare winter resident, but more numerous than *arizonæ*. It is also a rare summer resident among the hills twenty-five miles northwest of San Antonio; a male, shot June 8, 1890, which was feeding its young, is said to be "probably as typical as any United States specimens." I have taken all three forms (*tristis*, *arizonæ* and *mexicanus*) in winter, feeding together in the same flock, inside the city limits of San Antonio.

121. **Calcarius ornatus.** CHESTNUT-COLLARED LONGSPUR.—Common migrant.

122. **Rhynchophanes mccownii.** MCCOWN'S LONGSPUR.—Rare winter resident.

123. **Poocætes gramineus.** VESPER SPARROW. — Common migrant and winter resident.

124. **Poocætes gramineus confinis.** WESTERN VESPER SPARROW.—Abundant migrant and winter resident.

125. **Ammodramus sandwichensis alaudinus.** WESTERN SAVANNA SPARROW.—Abundant migrant, and common winter resident. I have no record of the eastern form, which I think probably occurs during migration.

126. **Ammodramus savannarum passerinus.** GRASSHOPPER SPARROW.—Abundant migrant, and rare summer resident. Found nesting a few miles west of the city.

127. **Ammodramus savannarum perpallidus.** WESTERN GRASSHOPPER SPARROW.—Abundant migrant.

128. **Chondestes grammacus.** LARK SPARROW.—Common migrant.

129. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW.—Common winter resident, very abundant during migration, and also an abundant summer resident. The greater portion of the migrating birds are intermediate or the Mississippi Valley form. The western form breeds here. They always nest in trees, probably for protection against snakes. One nest with three eggs also contained a Mockingbird's egg.

130. **Zonotrichia querula.** HARRIS'S SPARROW.—Common winter resident, more abundant during migration.

131. **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW. — Very abundant migrant and winter resident.

132. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.— Common winter resident.

133. **Spizella socialis.** CHIPPING SPARROW.—Rare summer resident, not noticed during migration; found nesting twenty miles west of San Antonio among the hills.

134. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.—Rare winter resident.

135. **Spizella pallida.** CLAY-COLORED SPARROW.— Abundant migrant.

136. **Spizella pusilla.** FIELD SPARROW.—Abundant winter resident and migrant. There is a paler form (not *S. p. arenacea*) which can easily be distinguished from typical eastern birds, which is common here in summer and breeds among the hills. A nest, taken April 22, 1889, contained four fresh eggs.

137. **Junco hyemalis.** SLATE-COLORED JUNCO.—Common migrant.

138. **Amphispiza bilineata.** BLACK-THROATED SPARROW. Common resident.

139. **Peucæa cassini.** CASSIN'S SPARROW. Common migrant and summer resident.

140. **Peucæa ruficeps eremœca.** ROCK SPARROW.—Common summer resident, and may winter, in the rocky country among the hills north and northwest of San Antonio. A nest with three young, found May 14, 1891, was placed on the ground in a tuft of grass near a running stream, and was composed of fine grass and lined with a few horse-hairs. It was very similar to the nest of the Vesper Sparrow. The note or short song of this bird is unlike that of any other Sparrow I know of.

141. **Melospiza fasciata.** SONG SPARROW.—Common winter resident.

142. **Melospiza lincolni.** LINCOLN'S SPARROW. — Abundant migrant, and common winter resident.

143. **Melospiza georgiana.** SWAMP SPARROW.—Rare migrant. A few probably winter here.

144. **Passerella iliaca.** FOX SPARROW.— Common winter resident.

145. **Pipilo erythrophthalmus.** TOWHEE. — Rare migrant.

146. **Pipilo maculatus arcticus.** ARCTIC TOWHEE. — Common winter resident.

147. **Pipilo chlorurus.** GREEN-TAILED TOWHEE. — In the spring of 1885, during the last week in February, I shot several of these birds at a place near the Medina River, fifteen miles south of San Antonio, and saw others. I have not met with it since. They were scratching among the leaves in the thick underbrush, and were extremely shy. They may possibly occur regularly in this particular locality, but I have not been there since the occasion referred to.

148. **Cardinalis cardinalis.** CARDINAL. — Common resident, much more abundant in summer than in winter. During the migration they are particularly numerous, passing by in flocks. On Feb. 3, 1890, I shot a male the plumage of which is peculiar; it resembles a caged bird which Mr. Ridgway says he once saw. I saw another similar to the one taken, at the same time, but was unable to get a shot at it. They were in company with other Cardinals.

149. **Pyrrhuloxia sinuata.** TEXAN CARDINAL. — Common resident, but very rare north of San Antonio. The eggs of this bird cannot be distinguished from those of the common Cardinal, except perhaps that the brown markings are as a rule much clearer and of a deeper shade, and cluster more thickly toward the larger end. In regard to size, I have been unable to discover any difference. The nest, however, of the Texan Cardinal is always built of much finer material than that used in the construction of nests of *C. cardinalis*.

150. **Habia ludoviciana.** ROSE-BREASTED GROSBEAK.—Rare migrant.

151. **Guiraca cærulea eurhyncha.**—WESTERN BLUE GROSBEAK. Rare summer resident.

152. **Passerina cyanea.** INDIGO BUNTING.— Tolerably common migrant.

153. **Passerina ciris.** PAINTED BUNTING.—Common summer resident.

154. **Spiza americana.** DICKCISSEL.—Very abundant migrant, and common summer resident. They begin to arrive about the middle of April, and within a week after their first appearance their monotonous notes may be heard from daylight till dark, while hundreds of flocks are to be seen passing continually. At this time they play particular havoc among the oats, which begin to ripen at this season. A farmer on the Medina River told me last year that he considered one fourth of his crop (about twenty acres) was taken by these birds.

155. **Calamospiza melanocorys.** LARK BUNTING. — Common winter resident.

156. **Piranga erythromelas.** SCARLET TANAGER.—Rare migrant.

157. **Piranga rubra.** SUMMER TANAGER.— Common summer resident. They are commonly known as 'Bee Birds' here, from their habit of catching honey bees, of which they seem extremely fond.

158. **Progne subis.**—PURPLE MARTIN.—Common summer resident.

159. **Petrochelidon lunifrons.** CLIFF SWALLOW.—Abundant summer resident.

160. **Chelidon erythrogaster.** BARN SWALLOW.—Common migrant; I have seen it early in June, but have found no nests here.

161. **Tachycineta bicolor.** TREE SWALLOW.—Common migrant.

162. **Clivicola riparia.** BANK SWALLOW.—Rare migrant.

163. **Stelgidopteryx serripennis.** ROUGH-WINGED SWALLOW.—Common migrant.

164. **Ampelis cedrorum.** CEDAR WAXWING.—Abundant migrant, and common winter resident.

165. **Lanius ludovicianus.** LOGGERHEAD SHRIKE.—Rare migrant; probably a few remain during winter.

166. **Lanius ludovicianus excubitorides.**—WHITE-RUMPED SHRIKE.—Common winter resident.

167. **Vireo olivaceus.** RED-EYED VIREO.—Common migrant, and rare summer resident.

168. **Vireo flavifrons.** YELLOW-THROATED VIREO.—Common migrant. On June 8, 1891, I found a nest, and shot the male bird, about thirty miles northwest of San Antonio.

169. **Vireo solitarius.** BLUE-HEADED VIREO.—Common migrant.

170. **Vireo atricapillus.** BLACK-CAPPED VIREO.—Rare during migration at San Antonio, but found tolerably common and nesting in the hilly country west and northwest of San Antonio.

171. **Vireo noveboracensis.** WHITE-EYED VIREO.—Common migrant and summer resident.

172. **Vireo bellii.** BELL'S VIREO.—Abundant summer resident.

173. **Mniotilta varia.** BLACK-AND-WHITE WARBLER.—Common migrant.

174. **Helminthophila pinus.** BLUE-WINGED WARBLER.—Tolerably common migrant.

175. **Helminthophila ruficapilla.** NASHVILLE WARBLER.—Tolerably common migrant.

176. **Helminthophila ruficapilla gutturalis.** CALAVERAS WARBLER.—Common migrant, much more numerous than the Nashville Warbler.

177. **Helminthophila celata.** ORANGE-CROWNED WARBLER.—Abundant migrant and rare winter resident.

178. **Helminthophila peregrina.** TENNESSEE WARBLER.—Rare migrant.

179. **Compsothlypis americana.** PARULA WARBLER.—Tolerably common migrant and rare summer resident. Found nesting in localities where the 'Spanish,' or 'hanging,' 'moss' covers the trees.

180. **Dendroica æstiva.** YELLOW WARBLER.—Common migrant.

181. **Dendroica coronata.** MYRTLE WARBLER.—Abundant migrant, and common winter resident.

182. **Dendroica maculosa.** MAGNOLIA WARBLER.—Rare migrant. One male, taken May 12, 1891, is my only record of this species.

183. **Dendroica blackburniæ.** BLACKBURNIAN WARBLER. — Rare migrant.

184. **Dendroica dominica albilora.** SYCAMORE WARBLER. — Common migrant, and rare summer resident. On May 22, 1889, I shot a female which was picking up nest material. I have observed them on several occasions in the month of June, in the sandy, black oak region, and I shot a male singing on June 7, 1891. I have no doubt I shall find their nests.

185. **Dendroica chrysoparia.** GOLDEN-CHEEKED WARBLER. — The nearest point to San Antonio that I have observed this bird, is about twenty miles west of the city. I have also taken them in Medina, Bandera, Kerr, Kendall, and Comal Counties. They are nowhere abundant, and only to be met with in the thickest cedar brakes, and as these are fast being cut and burnt out, the bird will no doubt become still more rare. They breed in all the counties I have named, as I have observed them feeding young birds at localities in all of them, but I was too late to get eggs both in 1890 and 1891. I can give no account of the migration of this species; the nearest approach to a migratory movement that I have observed was on May 13, 1891, when I obtained a male, ten miles from thick cedar, in company with Redstarts, Blue-headed Vireos, and a Wilson's Warbler. (The migration of birds in 1891 was unusually late.) In 1889 I obtained them in the middle of April

Upon examining the stomachs of a number of young birds which were being fed, I found they all contained (with other insects), a number of small black lice (*Aphis* sp.) which I watched the old birds collecting from the green cedar limbs.

The adult female must be an extremely shy bird, as I have met with it only when feeding its young. The actions of the male Golden-cheeked Warbler are similar to those of most Warblers, flying from tree to tree in search of insects, and at short intervals uttering its note, which when once heard is not easily forgotten, nor easily described. It consists of four parts, and is unlike any other Warbler's note I have heard. In addition to this there is the usual alarm note common to so many other Warblers and small birds.

Breeding in the same localities with the Golden-cheeked Warblers I found Rock Sparrows, Black-capped Vireos, and Mexican Goldfinches.

186. **Dendroica virens.** BLACK-THROATED GREEN WARBLER — Common migrant.

187. **Dendroica vigorsii.** PINE WARBLER.—Rare migrant. Only two specimens noticed, both in 1890, a female Feb. 8, shot in a huisache tree, and a male on March 10 in a willow tree close to the river.

188. **Seiurus aurocapillus.** OVENBIRD.—Common migrant. Abundant in 1890.

189. **Seiurus noveboracensis.** WATER-THRUSH.—Common migrant.

190. **Seiurus noveboracensis notabilis.** GRINNELL'S WATER-THRUSH. —Rare migrant. Only one specimen recorded, a male, shot May 17, 1889, fifteen miles south of San Antonio.

191. **Seiurus motacilla.** LOUISIANA WATER-THRUSH.—Rare migrant. A male obtained on April 9, 1889, is the only one I have taken. It was shot close to the Medina River, eighteen miles southwest of San Antonio.

192. **Geothlypis formosa.** KENTUCKY WARBLER.—Tolerably common summer resident. They make their nests among the tall weeds in the river bottom lands. One of the few birds whose nests are made on the ground in this region.

193. **Geothlypis philadelphia.** MOURNING WARBLER.—Rare migrant.

194. **Geothlypis macgillivrayi.** MACGILLIVRAY'S WARBLER. — Rare migrant. Probably occurs regularly, though I did not meet with it till 1891, when I procured several specimens, all females. It must be a late migrant, as the first were taken May 18 and again on May 20.

195. **Geothlypis trichas.** MARYLAND YELLOWTHROAT.—Yellowthroats are very common during migration, the greater number of them being intermediate between *trichas* and *occidentalis*. A few remain all winter among the rushes along the river.

196. **Geothlypis trichas occidentalis.** WESTERN YELLOWTHROAT.—Common migrant. Two late records in 1891 are May 16, male, and May 20, female.

197. **Icteria virens.** YELLOW-BREASTED CHAT.—Common summer resident.

198. **Sylvania mitrata.** HOODED WARBLER.—Rare migrant, common in 1890.

199. **Sylvania pusilla.** WILSON'S WARBLER.—Tolerably common migrant.

200. **Sylvania canadensis.** CANADIAN WARBLER.—Rare migrant.

201. **Setophaga ruticilla.** AMERICAN REDSTART.—Common migrant.

202. **Anthus pensilvanicus.** AMERICAN PIPIT.—Common winter resident, and abundant during migrations.

203. **Anthus spragueii.** SPRAGUE'S PIPIT.—Rare migrant.

204. **Oroscoptes montanus.** SAGE THRASHER.—Rare migrant. I took one of these birds in 1884, and observed another with it, but have never come across it since.

205. **Mimus polyglottos.** MOCKINGBIRD.—Abundant resident, and a great nuisance around vineyards. Mr. Toudouze shot and poisoned nearly five hundred of these grape robbers among his vines in 1890.

206. **Galeoscoptes carolinensis.** CATBIRD.—Migrant; tolerably common.

207. **Harporhynchus rufus.** BROWN THRASHER.—Rare migrant and winter resident.

208. **Campylorhynchus brunneicapillus.** CACTUS WREN.—Common resident.

209. **Salpinctes obsoletus.** ROCK WREN.—Rare migrant and summer resident. In a rock quarry a mile north of the city several pairs of these birds breed every year.

210. **Catherpes mexicanus conspersus.** CAÑON WREN.—These birds are common among the hills west and northwest of the city, where they

breed. Several pairs also build nests in the large lumber yards in San Antonio, and also in the buildings on the Fair Ground. I have noticed them in November, but am not sure that they remain all winter.

211. **Thryothorus ludovicianus.** CAROLINA WREN.—Common resident.

212. **Thryothorus bewickii bairdi.** BAIRD'S WREN.—Abundant migrant and resident. The resident birds are much lighter in color, and easily distinguished from those which pass through during the spring migrations. In 1889 I paid particular attention to the nesting habits of this species. I placed about two dozen old tin cans in brush heaps and crotches of trees on the outskirts of the city, and in every case they were occupied by these birds. In some instances I took the eggs, shook out the nest, and placed the can in a fresh place close by, when they soon built another nest. In one particular case two nests and two sets of eggs of six each, were taken from an old coffee pot, and then another nest was made in the same pot, and a brood raised, by the same parents. It was noticed that, in order to get them to start again in the same can, it was always necessary to put it in a fresh place, which was sometimes only a few steps away; when the nest was taken, and the can left in the same position, they would not commence a new nest.

213. **Troglodytes aëdon.** HOUSE WREN.—Rare migrant.

214. **Troglodytes aëdon parkmanii.** PARKMAN'S WREN.—Rare migrant.

215. **Troglodytes aedon aztecus.** WESTERN HOUSE WREN.—Common migrant, and rare winter resident.

216. **Cistothorus stellaris.** SHORT-BILLED MARSH WREN.—Rare migrant. Taken in 1884, but not observed since.

217. **Cistothorus palustris.** LONG-BILLED MARSH WREN.—Tolerably common migrant. A specimen taken on November 14, 1890, is marked "intermediate,—*C. palustris* as to bill, *paludicola* as to coloration."

218. **Certhia familiaris americana.** BROWN CREEPER.—Common migrant. All specimens I have taken have throats more or less glossy white, and are marked "approaching *mexicana*."

219. **Sitta canadensis.** RED-BREASTED NUTHATCH.—Rare migrant.

220. **Parus bicolor texensis.** TEXAN TUFTED TITMOUSE. — Common in winter.

221. **Parus atricristatus.** BLACK-CRESTED TITMOUSE. — Common resident. The favorite food of the Black-crested Titmouse during winter is the pecan nut; they hold them on the horizontal limbs, or place them in the cracks of the bark, and break them open by knocking with their bills, like Woodpeckers. They make their nests in hollow trees as a rule, but on two occasions I have found them nesting in Wren boxes close to houses, and once in the roof of a house occupied by a family with whom I was staying.

The habitat of *P. bicolor texensis*, given in Ridgway's 'Manual of North American Birds' is "Southeastern Texas (Bee County)." Now as Bee County is about south of Bexar County, it would more properly be said to be in southwestern Texas. The character of the country surrounding

both points, and between the two counties, is similar, and the result of my observations thus far goes to show that both birds are liable to be found together over a considerable portion of southwestern Texas.

222. **Parus carolinensis agilis.** PLUMBEOUS CHICKADEE.—Common resident, more numerous in winter than in summer.

223. **Auriparus flaviceps.** VERDIN.—Common resident. As winter approaches, the nests of these birds, which have been used to sleep in, like all other nests become worn out, decayed, and often considerably damaged by the wind. When this occurs, new nests are immediately built in the place of the old ones. These winter nests, however, are not nearly as bulky or as nicely made as the ones in which the broods are raised in the spring. In regard to the number of eggs laid by this bird in this locality, I once took a set of five, but this is the only instance that has come under my notice, four eggs in a set, and occasionally three, being the usual number here.

224. **Regulus satrapa.** GOLDEN-CROWNED KINGLET.—Common migrant. Not observed in winter earlier than the first week in February.

225. **Regulus calendula.** RUBY-CROWNED KINGLET.—Abundant migrant, and common in winter in suitable localities.

226. **Polioptila cærulea.** BLUE-GRAY GNATCATCHER.—Abundant migrant; a few remain all winter in sheltered spots. It is also a rare summer resident. I have taken several nests.

227. **Turdus fuscescens.** WILSON'S THRUSH.—Rare migrant. The only specimen I have taken was in company with Olive-backed Thrushes, on May 18, 1891.

228. **Turdus aliciæ.** GRAY-CHEEKED THRUSH.—Common migrant.

229. **Turdus ustulatus swainsonii.** OLIVE-BACKED THRUSH.—Migrant Not as common as the Gray-cheeked Thrush.

230. **Turdus aonalaschkæ.** DWARF HERMIT THRUSH.—Migrant. Tolerably common.

231. **Turdus aonalaschkæ auduboni.** AUDUBON'S HERMIT THRUSH.—Migrant. Typical specimens are rare. A few probably winter here, as I have taken them early in February. The Hermit Thrushes that are most abundant are an intermediate form between *auduboni* and *pallasii;* these are quite common in winter, and numerous during migration.

232. **Turdus aonalaschkæ pallasii.** HERMIT THRUSH.—Rare migrant and winter resident. The following notes on the migration of the different forms of Hermit Thrush for 1890 will prove interesting from the fact that all the twenty-five specimens were taken in the same place, a small patch of under-growth, among the tall pecan trees on the river, about two miles south of the city.

T. aonalaschkæ, first taken Feb. 3; next March 4, 18, 19, 24; last April 2; total, 6 specimens.

T. a. auduboni, first taken Feb. 8; next, March 24, 28; last April 8; total, 4 specimens.

Intermediates between *auduboni* and *pallasii*, first Feb. 3; next Feb. 4, 10, 14, 20, 25, March 10, 13, 14; last March 19; total, 12.

T. a. pallasii, first January 31; next and last, Feb. 10; total, 3.

233. **Merula migratoria.** AMERICAN ROBIN. — Abundant migrant; occasionally seen, but not common, in winter.

234. **Sialia sialis.** BLUEBIRD. — Common migrant and rare summer resident.

Since this list was prepared last winter I am able to record the following birds from this locality, all of which (with the exception of the Ibis) no doubt occur regularly during migration in Bexar County.

235. **Podilymbus podiceps.** PIED-BILLED GREBE.
236. **Gelochelidon nilotica.** GULL-BILLED TERN.
237. **Aythya marila nearctica.** BLUEBILL. SCAUP DUCK.
238. **Erismatura rubida.** RUDDY DUCK.
239. **Anser albifrons gambeli.** WHITE-FRONTED GOOSE.
240. **Plegadis guarauna.** WHITE-FACED GLOSSY IBIS.
241. **Macrorhamphus scolopaceus.** LONG-BILLED DOWITCHER.
242. **Tringa bairdii.** BAIRD'S SANDPIPER.

SUMMARY.—The total number of birds I have myself observed, exclusive of Swans, Grebes, Gulls, Terns and others which have been seen but not identified, is two hundred and forty-two. Of these eighty-four are known to breed within thirty miles of San Antonio. About thirty species may be considered as common residents all the year round. Of the total number about one half occur as regular migrants. It would be a difficult matter to classify the whole, with any degree of satisfaction, as so many of the migrants are also winter or summer residents more or less numerous. Then there are the regular summer residents, which leave in the fall, and are not counted with the transients, though many of them pass on further north. Lastly there are the rare stragglers and occasional visitors which have appeared at different times of the year.

HABITS OF THE HUDSONIAN CURLEW IN MASSACHUSETTS.

BY GEORGE H. MACKAY.

OF THE various shore birds which are visitants to New England during migration the most difficult to take, on account of its extreme vigilance, is the Hudsonian Curlew (*Numenius hud-*

sonicus). I refer to the adult birds, the young being gentle and tame in comparison. As a consequence comparatively few 'Jacks,' as they are commonly called, are taken in New England; one of the largest receivers of game in Boston informing me that in his opinion not over a hundred, if as many, that have been shot in this vicinity, are annually brought into the market. Speaking for Nantucket and Tuckernuck Islands, as far as I am aware, not over fifteen or twenty of these birds a year, on an average, have been shot there during the past seventeen years, and the local saying, that "it does not pay to go after them," is true, they being too shy and too limited in number to make it any object, either for gain or for pleasure. During these seventeen years there have never been more than one hundred birds on an average living on the above islands each year, and for the past few years I have noticed a falling off from this number. Many of them have, I think, passed one or more summers on these islands, for they appear about the same date and in the same numbers, frequenting the identical localities, and flying from place to place in about the same manner. Thirty-five years or more ago there used to be many more than at present, and according to a reliable account there were some fifteen hundred birds, during the summer of 1833, living on the two islands.

They were apparently as shy then as now, for even then it was considered essential in order to take them to mortise a hole in the ground for concealment in the locality which they frequented or passed over, care being taken to remove the soil taken out to some distance in a wagon in order that the place might appear perfectly natural. Stands were dug in the centre of a clump of bushes, as being less noticeable. In times past, on Cape Cod, I have used a hogshead, sunken level with the marsh, from which to shoot them, but even under such conditions I never secured more than nine in one day, and that only once. The Hudsonian Curlew is a very observing bird and perceives at once anything strange and out of harmony with the natural surroundings of any locality which it has been in the habit of frequenting, and in order to get a flock up to the decoys considerable care must be exercised. Single birds or pairs will, however, decoy fairly well if they have not been harassed. These birds have a way of setting their wings stationary and sailing, when headed for the decoys, at a distance of one hundred yards or more, the flock

separating out so that there are scarcely any two birds together, and then hanging, as it were, in the air. During this time they are most carefully listening and scanning the decoys and surroundings. A movement causes them to spring up in the air several feet, and as this is generally when aim is being taken they are apt to be missed by being undershot. In order to get them as near as possible I have frequently set my decoys only a few feet to windward of my stand, as it is customary for them when heading for the decoys to keep falling off to leeward of them. They are not an easy bird to kill, being strong and powerful, and as the distance is usually great at which they are shot at, owing to their vigilance, many go off wounded and are not recovered. Should one or more be wing broken, they frequently commence calling, which causes the remainder of the flock to hover around for a short time, apparently to give encouragement to the wounded ones, and while their attention is thus absorbed they will often afford the sportsman a second shot, if he keeps concealed. Were it not for the satisfaction of getting so shy a bird, for as a rule they are but indifferent eating, there would be little inducement to waste the time necessary to obtain an occasional one. I take a few every year by getting out of my wagon into some place of concealment, when I observe a flock in the distance on the ground, and letting my companion drive around the other side and start them towards me. Long familiarity with the ground enables me to form some idea as to what course they are likely to pursue, and I have obtained more or less in this manner.

They make two notes, one a very clear, penetrating, staccato whistle, repeated four or five times in quick succession, and which is very far-reaching. It is given when flying, also when alarmed, and on taking flight. The other consists of two, low, straight whistles or notes, when a flock is alighting. Flocks also make a rolling note, lasting as long us it would take to count six or seven. The sound is similar to that produced by a boy's lead bird whistle filled with water. It is uttered when the birds approach, and are over a marsh or feeding ground, at an altitude of sixty or seventy yards. I have never heard of its being made by single birds.

The Hudsonian Curlew is a tide bird, frequenting the sand flats near the edge of the water, when they become uncovered,

and resorting to the marshes and uplands when driven from the former by the in-coming tide. They feed on fiddler crabs, grasshoppers, and the large gray sand spiders (*Lycosa*) which live in holes in the sand among the beach grass adjacent to headlands, huckleberries, which they pick from the bushes, and beetles (*Lachnosterna*, Scarabæidæ), all of which are usually mixed with coarse gravel. When a flock of these birds is on the ground where they have been feeding, they become scattered, twenty-five or thirty birds covering fifteen or twenty yards' space. At such times they do not appear to be particularly active, moving about in a rather slow, stately manner, although I have once in a while seen them run. During such times I have occasionally noticed one or more birds fly away from the flock, although undisturbed. At other times I have seen a single one or a pair pass over the flock which was resting on the ground and neither pay the slightest attention to the other, which seems peculiar as I should expect the ones flying to join those on the ground. I am informed, on what I consider good authority, that by keeping concealed, the whole of a flock of young birds, when on the ground, may be killed by repeated shots without their taking flight; I have never had an opportunity of testing it, but it certainly would be impossible to accomplish such a result with the old birds. These young birds may be distinguished from the adults by their generally younger appearance and lighter colored plumage. Their legs also will bend when the older ones' will break. They are known to the local gunners as 'Blue-legs,' from their legs being lighter colored than those of the adults, and also as 'Foolish Curlew,' the latter on account of their tameness in comparison with the older birds.

When passing to and from their feeding grounds they usually fly at an altitude of about thirty yards, unless it is quite windy, when they keep within a few feet of the ground, or water, if they are passing over it. I have seen them flying only a few feet above the water during their migration south in July. As the season advances the birds frequent the beach grass near the shore, and at such times the young birds can be driven up to with horse and wagon; but rarely, if ever, can the adult birds be so approached. The adults appear about the fifteenth of July, the greater portion going south by the end of the month, and it seems to require from three to four weeks before all have passed.

When on migration they fly similarly to Geese and Ducks at such times. The young birds first appear about the end of August, and continue coming until into October. I have never seen these young birds in flocks on Nantucket Island, nor associated with the adults, there usually being not over five or six birds, or even less, together.

Some Hudsonian Curlews migrate along the New England coast in the spring on their way to the north, appearing as early as the fourteenth of May, and I have heard of instances when two were shot on April 20, 1891, on Muskeget Island, and twelve seen on April 23, 1891, standing on Stony Point, Nantucket Island; also one noted on April 10, 1892, at Nantucket Island. These dates are the earliest which have come to my notice. About the twentieth of May is a more probable date to expect them. When noted in the spring it is generally on very fine, warm, and clear mornings. They are seldom seen in stormy weather, but usually before it. That these birds are powerful and enduring fliers is evidenced by their long, pointed wings. It may be of interest if I quote from Mr. Robert O. Cunningham's book ('Notes on the Natural History of the Strait of Magellan,' 1871, Nassau). This gentleman writes (page 334) that he "observed on March 30, 1868, large flocks of small Curlew (*Numenius hudsonicus*) feeding on the mud flats uncovered by the tide." Again he mentions (page 432) seeing on Nov. 16, 1868, "an enormous flock of the small Curlew seen on former occasions"; this was off Punta Arenas, Ancud Bay. From the above the inference is that the Hudsonian Curlew winters to a greater or less extent in Patagonia.

Hudsonian Curlews vary considerably in size, for I have shot specimens nearly as large as some small Long-billed Curlew (*N. longirostris*), and some but little larger than a large Eskimo Curlew (*N. borealis*). Their bills also vary in length.

As it may be of interest to hear something regarding this bird's movements in South Carolina I would add that they arrive in the vicinity of Port Royal on their northern migration, from the fourteenth of April to the middle of May, departing about the twenty-second of May, the height of abundance being about May first. In this locality they always leave the marshes about sunset, unless the tide drives them off earlier, to fly to their roosting place, some sand bank on the coast. At such times they depart in flocks of

twenty-five to three hundred birds, and late every afternoon some five thousand in the aggregate have been seen going to roost, that being about the number living in this vicinity. They come mostly from Broad River.

It may not be out of place to say a few words regarding the occurrence of the Long-billed Curlew (*N. longirostris*) in Massachusetts. As far as my experience shows, it is a rare bird in New England, and has been for many years. Personally I have seen but three of them taken. One of a pair (a friend shooting the other) I killed at Farmer's Pond, Swampscott, Mass., a number of years ago. A lone bird was shot about five years ago on Nantucket Island, which I saw. These examples were all taken during the summer.

I append the following notes, those from 1858 to 1876 inclusive are for Cape Cod, Mass. They were given to me in 1877 by my old shooting friend Mr. A. Denton. The others are my own, taken, unless otherwise stated, at Nantucket.

1858, July 20.—First birds shot.
1859, July 20.—First birds shot, most killed July 20 to August 21.
1860, July 20.—First birds shot, most killed July 20 to August 21.
1861.—No birds of any account.
1862.—No birds.
1863, July 15 to Aug. 10.—A few shot.
1864.—No birds.
1865.—Birds scarce in July, but nine shot in August.
1866.—No birds.
1867.—Birds very scarce, scarcely any.
1868, July 24.—Shot some birds.
1869.—But few birds, a few shot in August.
1870.—No birds to speak of.
1871.—No birds in July, but some shot in August.
1872.—Birds very scarce.
1873, Aug. 16.—First birds shot.
1874.—No birds in July or August.
1875.—Very few birds in July or August, shot two in September.
1876.—No birds; very dry.
1877, July 18.—Saw several small flocks, Patchogue, Long Island, N. Y.
" July 19.—Shot five at Patchogue, Long Island, N. Y.
" July 20.—Shot two, Patchogue, Long Island, N. Y.
" July 30, Nantucket, Mass.—Saw twelve, shot three.
" Aug. 23.—Saw twelve, shot one.
" Aug. 25.—Saw ten, shot one.
1878, July 25.—Shot one, saw a flock.

1878, July 26.—Shot two, saw a small flock.
" Aug. 26.—Shot two, all I saw.
" Aug. 27.—Shot one.
" Sept. 20.—Shot one.
1880, July 21.—First birds shot (two).
" July 25.—Shot four; there are two flocks living here (Nantucket), one in the east, and one in the west part of the island.
1880, Aug. 1.—Shot three.
1881, Aug. 6.—First birds shot.
" Aug. 8.—Shot one, saw ten.
" Aug. 9.—Shot one.
" Aug. 11.—Shot two, saw four or five.
1882, July 26.—First birds shot (two), saw twenty.
" July 28.—Shot five, saw thirty.
" Aug. 26.—Shot one.
1883.—No record of any.
1884, July 22.—First birds shot, one flock here.
1885, Aug. 16.—Shot three, saw twenty-four.
" Aug. 23.—Shot one, saw eight.
" Sept. 2.—Shot one.
1886.—No notes.
1887, August.—Shot three, saw eight, no date.
1888, Aug. 11.—Shot two.
1889, Aug. 4.—Saw a flock of about thirty, shot one.
" Aug. 25.—A few, shot one.
" Sept. 22.—Saw two and shot both.
1890, July 16.—First birds seen.
" July 27.—Saw thirty-three.
" Aug. 2.—Saw eighteen, shot one.
" Aug. 10 —Shot one.
" Aug. 11.—Saw twelve.
1891, April 20.—Two shot at Muskeget Island.
" April 23.—Twelve seen on Stony Point, Nantucket.
" July 13.—Saw four, the earliest I have known them.
" July 31.—Saw twenty, shot one.
" Aug. 6.—Saw six five miles off Marblehead Neck, Mass., flying south.
1891, Aug. 16.—About thirty living on Tuckernuck Island.
" Sept. 14.—Five shot.
1892, April 10 (?).—One seen on or about this date.
" June 1.—One seen flying towards the east, well up; it whistled twice.
1892, June 25 (?).—Seven seen on or about this date, Tuckernuck Island.
1892, July 17.—First bird seen, two or three heard to whistle, eastern part of Nantucket; wind west by north.

1892, July 27.—Eight seen at Quay's Point, Nantucket.

" July 29.—One seen at west end of Nantucket.

" Aug. 2.—Muskeget Island, Mass., saw twenty-three, shot one.

" Aug. 3.—Muskeget Island, saw about forty in the afternoon. They come here to roost, arriving from 4 to 7 P. M. in several flocks. They depart in the morning about 4.15 A. M..

1892, Aug. 4.—Sixteen seen, eastern part of Nantucket.

" Aug. 6.—One seen high in the air, eastern part of Nantucket.

" Aug. 21.—Saw two, shot one.

" Aug. 26.—Saw seven, shot one.

" Aug. 28.—Saw one and shot it.

There were about twelve birds living between the Miacomet and Hummuck Ponds during August. They were all adult birds. They left this locality on Sept. 4.

1892, Sept. 7.—One seen and shot at Hummuck Pond.

" Sept. 16.—I heard one today at the south side of Nantucket. I should estimate that in all there had been about seventy birds living around Nantucket, Tuckernuck and Muskeget Islands this summer.

FURTHER NOTES ON BIRDS OF THE GRAY'S HARBOR REGION, WASHINGTON.

BY R. H. LAWRENCE.

ON APRIL 29, 1892, wishing further to study the birds of the Gray's Harbor region, I went by rail to South Aberdeen, taking a steamer that evening to Ocosta, the remaining miles of track not being quite ready for traffic. Most of my time was spent in the partly cleared land back of town and on the marshes about it. I left Ocosta May 5, going to Hoquiam, and next day left the Harbor. The great body of Ducks had migrated six or seven weeks before; but I saw a few flights of Geese,—some winter in the harbor. A few Gulls were seen at a distance. April 30 I noted forty-three kinds of birds, most of them being land birds. *Trochilus rufus* was very common; I counted over forty that day; it far outnumbers the other Hummers. On May 5 I was quite sure I heard *Empidonax difficilis* in a tree near the Ocosta pier.

Some notes made by me at South Bend, chiefly in February, are included here. South Bend has about two thousand inhabitants. It is on the Willapa River, three miles from its mouth. Willapa (Shoalwater) Bay, into which the river empties, is but ten miles south of the southern end of Gray's Harbor. It is vast and shallow, and reaches southward within four miles of the Columbia River at Baker's Bay. Ocosta, five miles from the bar, has about four hundred people, and has a fine view of the Olympic Mountains and the ocean. While in the field, sixty-three kinds of birds were noted.

Urinator pacificus. PACIFIC LOON.—Winter resident. Common on the Willapa, at South Bend, in February. One seen March 16, on Willapa Harbor (Shoalwater Bay), but not later. A skin seen, got at South Bend.

Urinator lumme. RED-THROATED LOON.—Winter resident Not common. A mounted bird seen, shot on Gray's Harbor. Four *U. imber* seen during my stay at Ocosta.

Ptychoramphus aleuticus. CASSIN'S AUKLET.—Rare. Two skins examined of birds found dead on the beach below Point Chehalis, by Mr S. A. Wye, after severe December storms. There were two or three dozen of this species lying about. A small Diver noted at South Bend in February and later, was probably *Brachyramphus marmoratus.*

Rissa tridactyla (**pollicaris?**). KITTIWAKE.—A little flock of Kittiwakes were noticed feeding in a pond of shallow water at South Bend, Feb 12. They picked, daintily, floating particles from the surface. Seen afterwards. Were probably all *R. tridactyla pollicaris.*

Phalacrocorax ——? —— CORMORANT.—Pretty common at South Bend in February. One or two seen on the Willapa, March 26. These birds in February perched by the hour on channel piles, with wings hanging down loosely. Some had a conspicuous white patch on the flank.

Pelecanus californicus. CALIFORNIA BROWN PELICAN.—Two mounted birds seen at South Bend,—one shot in November, on Willapa Harbor, where they are pretty common in the fall. They are not uncommon then on Gray's Harbor.

Anas carolinensis. GREEN-WINGED TEAL.—Common on Willapa Harbor and Gray's Harbor throughout the winter. Hunters brought in a good many at South Bend in February. One seen, shot near Ocosta, May 2.

Dafila acuta. PINTAIL.—Very common on Willapa Harbor throughout the winter. The gunners brought in many. A few probably breed at Gray's Harbor, and some must winter there

Glaucionetta clangula americana. AMERICAN GOLDENEYE.—A large flock of Ducks, about one hundred and fifty, seen near the shore at Ocosta,

April 30, I referred mostly to this species. It is rather common in the winter on Willapa Bay.

Clangula hyemalis. OLDSQUAW.—Several seen March 16, and a pair March 26, on Willapa Harbor. Hunters say they winter there.

Oidemia americana. AMERICAN SCOTER.—Winter resident. Not common. One seen at Ocosta May 5, a male.

Oidemia deglandi. WHITE WINGED SCOTER.—Winter resident. Very common. All the Scoters go north in summer, I think. Several seen on Gray's Harbor, April 30, and after. It was common in February at South Bend. Black Brant and Mallards also were common on Willapa Bay in February.

Macrorhamphus scolopaceus. LONG-BILLED DOWITCHER.—Very common about Ocosta during my stay. One shot May 2. Most of the 'Snipe' brought in were of this species. It associated with great flocks of Sandpipers of all sizes. *Gallinago delicata* was pretty abundant in a wet meadow for a few days. I noted this last species at South Bend in February.

Tringa minutilla. LEAST SANDPIPER.—April 30, I shot two out of a flock of about eighteen. At the time there were scores of large flocks of small Sandpipers on the marsh about me. During my stay I found that *Ereunetes occidentalis* was the most common of the Sandpipers. I think it outnumbered all combined. Sandpipers winter on Willapa Harbor. One *Tringa alpina pacifica* shot at South Bend, Feb. 25, out of a flock, was brought to me. It was said to be common.

Totanus melanoleucus. GREATER YELLOWLEGS.—One examined, shot May 1, near John's River, on a marshy island. Five or six others were seen by the gunner, at the same time, in a large mixed flock.

Numenius longirostris. LONG-BILLED CURLEW.—At this marshy island I examined two, May 3, just killed; and shortly after I saw several flying about.

Ægialitis vocifera. KILLDEER.—Rare. One, only, seen Feb. 16, on the muddy bank of the Willapa. It flew away, giving its familiar cry.

Ægialitis semipalmata. SEMIPALMATED PLOVER.—A little flock seen on the shore (beach) near Ocosta April 30. A few seen afterward with flocks of Sandpipers. Three shot May 2.

Arenaria melanocephala. BLACK TURNSTONE.—On May 3 five or six of these birds were seen in a great flock of Sandpipers and Dowitchers on a marshy island at John's River. I got very close to several on the beach near Ocosta on May 5.

Accipiter velox. SHARP-SHINNED HAWK.—While standing in the woods at South Bend, Feb. 17, one of this species dashed from cover and swept across the open and partly around me. Small and large Hawks are common on the marshes there and at Gray's Harbor.

Buteo borealis calurus. WESTERN REDTAIL.—One, pursued by three Crows, was shot, Feb. 14, on the marsh near South Bend. Two large Hawks seen at Ocosta, May 1, were probably of this species. Another

there, May 4, hovering over a wet meadow, looked like a *Circus hudsonius*.

Falco peregrinus anatum. DUCK HAWK.—I examined a mounted bird of this species shot near Ocosta in November (?). It was an immature bird.

Asio accipitrinus. SHORT-EARED OWL.—Common in February on the extensive salt marshes below South Bend. The birds flew about much in misty weather, looking as big as Eagles. They sat much on the edges of the many deep sloughs waiting for a species of rat. I found many evidences of their success in getting them. This Owl has a shrill, barking call like the 'ki-yi' of a little dog. This was heard only while it flew high above, sporting, or chasing some large bird (Hawk?). I shot two Feb. 21. The ovary of the female was coarsely granulated. Said to be common at Ocosta in winter.

Bubo virginianus saturatus. DUSKY HORNED OWL.—Resident. Pretty common. Specimens seen shot near Ocosta and South Bend.

Nyctea nyctea. SNOWY OWL.—I have seen several fine specimens, shot in winter near South Bend and Ilwaco, when they are often pretty common along the seashore.

Ceophlœus pileatus. PILEATED WOODPECKER.—Resident. Rather rare. A mounted bird seen, shot near South Bend. The railroad engineer there said he had seen them now and then, while camped on the upper Willapa. A pair was reported to keep near town, but I could never find them.

Melanerpes torquatus. LEWIS'S WOODPECKER.—Rare. In a wet meadow near Ocosta I shot one of these showy and strange birds, April 30. It was first seen on a fence, catching insects by making short sallies. I have seen this bird at Vancouver, Clarke County, in January.

Cyanocitta stelleri frontalis. BLUE-FRONTED JAY.—Resident. Common. A Jay shot at Ocosta, May 3, seems better referred to *C. stelleri*; but one examined at South Bend, and two shot at Ilwaco, March 13, are certainly '*frontalis*.' I think the latter race predominates.

Sturnella magna neglecta. WESTERN MEADOWLARK.—Common at South Bend, in February, on the salt marshes below town, and reported as at Ocosta a few weeks before I came. Dr. Cooper says they only winter on the coast. They sing finely the year around.

Ammodramus sandwichensis? SAVANNA SPARROW.—Not common. I saw a few of the larger-sized Savanna Sparrow while at Ocosta, and shot one May 2. Its measurements were: length 154.0 mm., extent 233.0, wing 75.0, tail 56.0, tarsus 20.0, bill 10.5. The bird was set aside, but overlooked, and it spoiled. A series of little accidents prevented my getting another. *A. s. alaudinus* was very common on the marshes about, and in full song.

Carpodacus purpureus californicus. CALIFORNIA PURPLE FINCH.—I saw and heard from six to a dozen nearly every day at Ocosta. One, shot May 1, was feeding in an unkept garden in a wet meadow. Generally one would sing pleasingly from the tiptop of some dead tree at the 'opens' about.

Spinus tristis. AMERICAN GOLDFINCH.—Not common. At Ocosta, May 4, a pair flew over a small meadow and alighted in a tree near me.

Spinus pinus. PINE SISKIN.—Resident. Hardly common. I shot one of two seen feeding in some willows at Ocosta, May 4. No others noted on Gray's Harbor. At South Bend, several times in February, I noted a flock of over thirty. These birds swarm in the orchards about Vancouver, Clarke County.

Zonotrichia leucophrys gambeli. GAMBEL'S SPARROW.—Summer resident. Common. Many seen at Ocosta on and along the edge of a low hill which was 'slashed' and burned over a year or two ago. They were singing well, and some seemed to be nesting. The testes of a male shot April 30 were well developed, as were also those of a *Z. l. intermedia* shot the same day; but those of a *Z. coronata* shot then were very small. *Z. l. gambeli* should have been in my 'Preliminary List' (Auk, IX, 39–47). I had hoped long ago to correct my own error, but Mr. Palmer anticipates me (Auk, IX, 309). One or two skins of the White-crowned Sparrow I sent Dr. Allen from Humptulips in April, 1891, and they were found by him to be *Z. l. intermedia*. Part or most of my notes on *intermedia* evidently should have been used for *gambeli*. Illness at that time prevented my getting a series of skins of these birds, and my trips to the harbor were usually hurried. I did not hear *Z. l. intermedia* sing, but saw several at Ocosta, and a few at Hoquiam, May 6. The song of *Z. l. intermedia* is a little different, I think, from that of *Z. gambeli*.

Zonotrichia coronata. GOLDEN-CROWNED SPARROW. — At and about Ocosta, April 30, I found three flocks of this species—in all about sixty individuals. A good many were seen on other days. The only sound they gave was a plaintive, querulous call of several notes. I shot one April 30. I have always found this species so fat as to make skinning difficult.

Pipilo maculatus oregonus. OREGON TOWHEE. — Resident. Not common. Feb. 17, I saw one at South Bend, and March 25, three more. The bird has an odd mewing call.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW. — Summer resident, not very common. I saw four or five brown Swallows at Ocosta, April 30; one had a piece of straw in its mouth. May 4 I shot a similar Swallow near there, which was of the above species. Dr. Cooper noted no *Clivicola riparia* in Washington, so that name may have to be eliminate from the list. *T. thalassina* was common at Ocosta, April 30. I saw two of this species at Astoria, Oregon, March 27. It is the most abundant Swallow in western Washington. After it comes *Chelidon erythrogaster* which I first noted, at Ocosta, May 3, two being seen. *Petrochelidon lunifrons* I have found nesting at the mouth of Lewis River, Clarke County, but never on the coast or Sound. *Progne* breeds at Olympia, but I have not seen it elsewhere.

Geothlypis trichas occidentalis. WESTERN YELLOWTHROAT.—Summer resident. Not common. One shot, another heard in and near some

bushes on the marsh at Ocosta, April 30. *Helminthopila c. lutescens* seemed to be the most common Warbler during my stay. Then came *Dendroica auduboni*, and after May 2, I often saw or heard *Sylvania p. pileolata*. At Hoquiam, May 6, I saw two *Dendroica nigrescens*, and shot one.

Thryothorus bewickii spilurus. VIGORS'S WREN. — Resident. Not common. One seen at Ocosta May 2; a few others heard. At South Bend I saw one, Feb. 18. Besides its harsh, grating call this Wren has a song represented somewhat by the following: *tr-twe, tr-twe, che-we', che-we', che-we'*. It is generally sung from the top of a tall bush or other high perch.

Cistothorus palustris paludicola. LONG-BILLED MARSH WREN.—Shot one of a pair seen Feb. 14 on the salt marsh below South Bend. At Ilwaco, March 9, I saw one, and listened to its song while it clung to a reed. Its song was a queer medley of grating, Wren-like notes, followed by clear little peeps,—animated, unique.

In regard to *Salpinctes obsoletus*, given in my 'Preliminary List' (Auk, IX, 47), Mr. Palmer suggests (Auk, IX, 310) that Gray's Harbor is much out of its usual range. It is; but the species was present in 1890. I have but once since met this bird: at Seattle, Nov. 15, 1891, when a single individual allowed for some minutes a close inspection. It moved about on a gravelly bank on Renton Hill.

BIRDS OF SOUTHWESTERN NEW MEXICO.

BY A. W. ANTHONY.

As faunal lists of the birds of our southwestern border are by no means as numerous as is desirable, those treating of the desert regions being especially rare, I have considered the following notes as perhaps worthy of publication. The region embraced in the present paper lies to the southward of the Southern Pacific Railroad, in the extreme southwestern part of Grant County, New Mexico, where that Territory extends its lines to the south into Mexico, making a 'pan handle' of forty miles north and south, by the same distance east and west.

This region is an extensive plain, having a mean elevation of about 5500 feet, and is broken by numerous short ranges of mountains usually not extending more than a few miles before

breaking away into the plain again; few of them have elevations of over 1500 feet above the surrounding country, the Animas and Sierra Hachita or Big Hachita ranges being notable exceptions to this rule. The former is the longest and most extensive range in this part of the country, being about forty miles in length and having peaks of perhaps 8000 feet elevation, while the Sierra Hachita extends its peaks to about 7000 feet.

Most of my observations were made in a small range of low mountains, known as the Apache Hills, lying five miles north of the national boundary. A description of these hills would answer for any of the ranges within a radius of forty miles. Lying with their greatest extent north and south, like nearly all of the ranges in this region, the Apache Hills cover an area of about thirty square miles, their highest elevation being about 1500 feet above the surrounding plain. The lower slopes are covered with a scattered growth of yucca, agave, and ocotillo,—a species of *Euphorbia*,—the dry blossom stalks of the two first-mentioned furnishing the only nesting sites for *Dryobates scalaris bairdi* and *Myiarchus cinerascens*.

Along the dry arroyos a few dwarfed mesquite bushes were found, with an occasional thorny shrub, none reaching a height of over six or seven feet. A few solitary dwarf junipers struggled for life on some of the highest slopes, and in one valley on the northern side of the range a dozen or more stunted evergreen oaks drew a miserable existence from the scanty soil. Even the various species of cactus usually so abundant in arid regions seemed to be less abundant and hardy than usual; a few chollas were found in nearly all of the arroyos, and small patches of *Opuntia* grew in several places on the lower slopes.

Water was not to be found in the entire range, our supply for camp use being drawn in wagons from a small spring in the Little Hachita mountains, ten miles west of Apache. During the winter season water was sometimes caught in small basins in the limestone, forming tanks which held more or less water for perhaps three months after a very wet winter, but during the remainder of the year no water was obtainable nearer than the above-mentioned spring.

The list is therefore, aside from the migrants, largely of species that live for the greater part of the year entirely without

water, raising broods of young that reach maturity, perhaps, before the rains of September introduce water as an article of every day use.

My observations extend from the last week in February to the last of October in 1886 and from the last of September to December 16 in 1889. During the months of June and July, and until August 15, the temperature during the day ranged from 110° Fahr. to 118° with frequent records of 125°. No rains fell until the latter part of August, when heavy storms of short duration formed several small ponds in the valleys, the lower part of the Playa Valley, sixteen miles west of Apache, being a sheet of water twenty miles in length by three miles wide, having a depth of not over ten inches, and lasting until late September. Here were found several species of Ducks and Geese, birds not properly belonging to the region, as it is only in unusually wet seasons that there is sufficient water to induce them to stop.

With the August rains came the first green grass; the landscape which since February had presented a burned, dead appearance, soon began to show signs of a coming springtime. The agaves sent up their blossom stalks, which in many cases reached a height of twenty-five feet; the ocotillos ventured to put out a fringe of small oval leaves, the first they had worn for eight months; and in an incredibly short time the agaves were crowned with a pyramid of waxy yellow flowers, furnishing an unfailing repast for thousands of Hummingbirds that had suddenly appeared on their southward journey. Cassin's Sparrows became common about the mouths of the arroyos where the grass was the greenest, and many species not noticed during the spring migration became more or less abundant.

Owing to hostile Apaches it was necessary to avoid the higher mountain ranges—the Hachita and Animas, as well as favorable points in the Sierra Nevada just south of the boundary. Many interesting records were thus lost, and the list becomes one of species inhabiting the barren hills and desert plains of southwestern New Mexico.

1. **Anas carolinensis.** GREEN-WINGED TEAL.—One was shot from a flock of *A. discors*, September 13, on a small pond seven miles east of Apache; two were taken at Hachita ten miles west of that point in October, 1889.

2. **Anas discors.** BLUE-WINGED TEAL.—A flock of about twenty was found, September 7 and 15, seven miles east of camp. Many species of Ducks and Geese were reported from the Playa Valley in September, but as I did not visit that locality until after they were gone I cannot be sure as to the species.

3. **Plegadis guarauna.** WHITE-FACED GLOSSY IBIS. — A company of three was found September 7 on the pond seven miles east of Apache, and an adult and young secured.

4. **Ardea candidissima.** SNOWY HERON.—A specimen was brought to me from the Playa Valley, September 24.

5. **Fulica americana.** AMERICAN COOT.—On September 13 a flock of ten was found at the pond east of camp.

6. **Recurvirostra americana.** AMERICAN AVOCET.—A flock of a dozen was started from a mud hole near camp, September 7.

7. **Gallinago delicata.** WILSON'S SNIPE.—One was seen for several days in October, 1889, about a mud hole near Hachita.

8. **Tringa maculata.** PECTORAL SANDPIPER.—A large flock was found near Apache, September 13.

9. **Tringa minutilla.** LEAST SANDPIPER.—A large flock in company with the preceding species.

10. **Numenius longirostris.** LONG-BILLED CURLEW.—On March 25 a pair was seen on an immense prairie dog town in the valley west of Apache.

11. **Charadrius squatarola.** BLACK-BELLIED PLOVER.—A pair was seen in the above-mentioned dog town late in March.

12. **Ægialitis vocifera.** KILLDEER. — One alighted near my cabin at Apache, September 4, in an almost exhausted condition, evidently a stray migrant. Three days later a large flock was found on the plain east of the Apache range.

13. **Callipepla squamata.** SCALED PARTRIDGE. — Rather abundant through most of the region explored, but more common in and near the mountains. Once or twice I found a flock several miles out on the plains, but I think they seldom wander far from the hills. A set of eight fresh eggs was taken on July 13 from a nest under a dead mescale (agave) on a high ridge. The nest was a mere hollow with a little dry grass to keep the eggs from contact with the hot rocks. I think that, late as it was, this must have been the first set, as no young were seen until the last of July, while birds but a few days old were taken as late as September 28.

C. gambeli and *Cyrtonyx montezumæ* were described to me from the Sierra Hachita, but none were met with. The Mexican Turkey is also said to be abundant in all of the ranges west and south of the region explored, and to have wandered on several occasions into the Sierra Hachita.

14. **Zenaidura macroura.** MOURNING DOVE.—Very abundant until May 5, after which date none were seen until August 20 when they arrived in large numbers on their way south. Eighty per cent of the females

taken at this time contained eggs that would have been deposited within a day or two. One bird was found incubating two eggs on September 6. Unfortunately, however, these eggs were destroyed by some animal, and I am unable to say whether they would have hatched. As no young were seen, I am inclined to think that most if not all of the eggs deposited at this late date were infertile. (See Zoe, Vol. I, p. 380.)

15. **Cathartes aura.** TURKEY VULTURE.—After its appearance in April it was common, and it probably nested in the region, as young were taken in August.

16. **Circus hudsonius.** MARSH HAWK.—Very abundant in September and October, but very rare or not noticed during the spring migration.

17. **Accipiter velox.** SHARP-SHINNED HAWK.—One seen on September 23 at Apache.

18. **Buteo borealis calurus.** WESTERN REDTAIL.—Probably most of the Redtails seen were winter residents. Rather common after late September and until April.

19. **Buteo abbreviatus.** ZONE-TAILED HAWK.—A few were seen all summer, but they were rather more plentiful in April, and seemed to be moving north. A favorite resort was about a large prairie dog town in the valley west of Apache.

20. **Buteo swainsoni.** SWAINSON'S HAWK.—But few were seen during the spring and summer, but when the fall migration began they were very abundant. On September 19, during a ride of forty miles across the plains, several hundred large Hawks were seen, all moving southward in companies of from two or three to fifteen. The percentage of species was about: *B. swainsoni* .75, *B. borealis calurus* .15, *Circus hudsonius* .10.

22. **Falco mexicanus.** PRAIRIE FALCON.—A single bird seen at Apache.

23. **Falco fusco-cœrulescens.** APLOMADO FALCON.—A pair was seen in the valley between Apache and Hachita, June 2.

24. **Falco sparverius.** AMERICAN SPARROW HAWK. —Abundant as a migrant.

25. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY.—Frequently seen in spring and early summer; one shot April 14. The presence of this species in the midst of this arid plain, seventy-five miles from the nearest stream of water, was something of a surprise to me, and I am still at a loss to account for their presence. It is quite possible that they may have been passing from the Rio Grande to the Gila River.

26. **Asio wilsonianus.** AMERICAN LONG-EARED OWL.—One shot in the Little Hachita range, April 30.

27. **Bubo virginianus subarcticus.** WESTERN HORNED OWL.—Rather common in all of the ranges, seeking shelter in the scrubby junipers during the day.

A *Megascops* was several times seen at Apache, but I am in doubt as to the species.

28. **Speotyto cunicularia hypogæa.** BURROWING OWL.—More or less common in all of the dog towns.

29. **Micropallas whitneyi.** ELF OWL.—One shot near Apache on September 6 is the only record.

30. **Geococcyx californianus.** ROADRUNNER.—No roadrunners were seen in the Apache Hills, although their tracks were seen on one or two occasions. At Hachita and in the little Hachita Mountains, however, they were not uncommon. At Hachita a pair came regularly to one of the mines for water, a small pool having been formed near the shaft, from the pumps. The visit was made at nearly the same hour each forenoon, and was eagerly looked forward to by a fox hound owned by one of the workmen. The dog never failed to give chase as soon as the birds were sighted, and the race was as much enjoyed by the birds as by the dog; they seemed to have no difficulty whatever in keeping well out of danger without taking wing, and usually found time during the chase to stop at the water hole and get their daily drink, after which they quickly disappeared.

31. **Ceryle alcyon.** BELTED KINGFISHER.—One seen near the railroad, September 23.

32. **Dryobates scalaris bairdi.** BAIRD'S WOODPECKER.—Rather common wherever yuccas or agaves afforded nesting sites. A nest was found, May 19, in the dry blossom stalk of an agave, containing four or five young not over two days old.

33. **Sphyrapicus thyroideus.** WILLIAMSON'S SAPSUCKER.—One seen near Hachita, September 30, 1889.

34. **Colaptes cafer.** RED-SHAFTED FLICKER.—Not seen after April 1. Common during winter and spring.

35. **Phalænoptilus nuttalli nitidus.** FROSTED POORWILL.—Poorwills were not uncommon about Apache after April 6, and one was seen in the Sierra Hachita or Big Hachita range as late as November 24.

36. **Chordeiles virginianus henryi.** WESTERN NIGHTHAWK — Two were seen flying south, July 26, which with one shot August 18 completes the record.

37. **Chordeiles texensis.** TEXAS NIGHTHAWK.—At Deming this species fairly swarmed in June and July, and was doubtless nesting. They were rather rare at Apache, however, being seen there on May 17 and on only one or two subsequent occasions. There seem to be but few of the habits of the Eastern Nighthawk that are shared by this species. *C. texensis* flies low and does much of his hunting within two feet of the ground, while a large part of his bill of fare is obtained by jumping up from the ground and catching passing insects, without taking wing—a habit also noticed in *Phalænoptilus*. The flight of *texensis* also is unaccompanied by the many aerial evolutions and booming notes so common in *virginianus*. The only note I have ever heard from *texensis* was a low chippering, uttered when a pair were chasing each other.

38. **Micropus melanoleucus.** WHITE-THROATED SWIFT.—A few were seen during the spring at Apache and again in October (1–15) about Hachita, ten miles west of the former camp.

39. **Trochilus alexandri.** BLACK-CHINNED HUMMINGBIRD.—Not uncommon about the blossoms of the mescales in August. It is quite probable that a few may have nested in the Apache Hills, as a female was taken July 9 that showed signs of having incubated quite recently.

40. **Trochilus platycercus.** BROAD-TAILED HUMMINGBIRD. — The only Hummingbird noticed during the spring migration. A few were seen hovering about the flaming red blossoms of the ocotillo, but it was more often heard screeching by overhead. It was abundant in August, feeding in company with all other Hummers upon the insects attracted by the mescale blossoms.

41. **Trochilus rufus.** RUFOUS HUMMINGBIRD.—None noticed until the last of July, when the first mescale blossoms appeared. Arriving by hundreds in early August, it fairly took possession of every blossom to the exclusion of all other species. The blossoms of the agave were considered the especial property of *rufus*, nor were his rights often contested. If an unfortunate Broadtail or Calliope happened to be feasting upon a choice bunch of flowers when a Rufous appeared upon the stage, his angry demand to vacate was seldom ignored. Occasionally a Hummer more hardy than the rest ventured to give battle, but the fight was always short and the victory to the Rufous. On November 4 a Hummer flew by me, over the top of the Little Hachita, that was either this species or the following.

42. **Trochilus calliope.** CALLIOPE HUMMINGBIRD.—First seen on July 15, and abundant after that date. Unlike the preceding, the present species was very shy and silent.

43. **Tyrannus verticalis.** ARKANSAS KINGBIRD.—More or less common during both migrations in all of the low ranges.

44. **Tyrannus vociferus.** CASSIN'S KINGBIRD.—In company with the preceding, and in and about the same numbers.

45. **Myiarchus cinerascens.** ASH-THROATED FLYCATCHER.—Abundant after April 14.

46. **Sayornis saya.** SAY'S PHŒBE.—After March 12 and during the spring migration Say's Phœbe was fairly common in nearly all of the cañons and along the rocky hillsides. A nest was taken on May 26, and young were seen later. No *Sayornis* were seen, however, after June 15 until the first fall migrant appeared August 30, they all having made a second migration in early June (see Zoe, Vol. I, p. 380).

47. **Contopus borealis.** OLIVE-SIDED FLYCATCHER. — Several were seen in a cañon east of Apache on September 6.

48. **Contopus richardsonii.** WESTERN WOOD PEWEE. — Seen only in fall; rather common from August 14 until the last of September.

49. **Empidonax difficilis.** WESTERN FLYCATCHER.—I have but one spring record, May 21. A few were seen and taken at Apache in August and September.

50. **Empidonax pusillus.** LITTLE FLYCATCHER.—A few were taken from July 30 to September 6. No spring records.

51. **Empidonax hammondi.** HAMMOND'S FLYCATCHER.—A few were taken from August 31 to September 15.

52. **Empidonax wrightii.** WRIGHT'S FLYCATCHER.—The most abundant of the genus from April 6 until the 30th, and from August 18 to September 16.

53. **Empidonax fulvifrons pygmæus.** BUFF-BREASTED FLYCATCHER.—Several were seen in August, and one taken on the 16th.

54. **Otocoris alpestris adusta.** Common on the plains and valleys throughout the region.

55. **Aphelocoma woodhousei.** WOODHOUSE'S JAY.—Common in the piñon growth in the Sierra Hachita and Animas range.

56. **Corvus corax sinuatus.** AMERICAN RAVEN.—Common throughout the region visited.

57. **Corvus cryptoleucus.** WHITE-NECKED RAVEN.—More common than the preceding. Old nests were frequently seen in the tall yuccas between Apache and the railroad. A nest was found on June 2 with one egg. On July 3 this same nest contained two young not over two or three days old. I am satisfied that this was the first brood, though what could have caused such late nesting I am unable to say. Nor was the tardiness confined to this single pair. During July nests were frequently seen with young still unable to fly, and it was not until August that young were seen on the wing.

38. **Molothrus ater.** COWBIRD.—Rare about camp in spring, but more common in late summer. No specimens were taken, and I am not sure whether *M. a. obscurus* occurred.

59. **Xanthocephalus xanthocephalus.** YELLOW-HEADED BLACKBIRD.—Rather common during most of the summer, usually in company with Brewer's Blackbird about the corrals.

60. **Agelaius phœniceus.** RED-WINGED BLACKBIRD.—A single bird on April 27 and one on October 19 complete the record; both were with Brewer's Blackbirds.

61. **Sturnella neglecta.** WESTERN MEADOWLARK.—A few Meadowlarks were seen in March and April, and but one or two in October.

62. **Icterus parisorum.** SCOTT'S ORIOLE.—First seen on April 26, and very common after the first of May. They were found chiefly in the ocotillos along the lower hills, after the migration had subsided, and were remarkable for their extreme shyness. Specimens taken the last of August were moulting and scarcely able to fly.

63. **Icterus bullocki.** BULLOCK'S ORIOLE.—A single male shot in a growth of ocotillos at Apache, May 15.

64. **Scolecophagus cyanocephalus.** BREWER'S BLACKBIRD.—Abundant at Apache and in all of the ranges of hills after April 20, and even throughout the summer with the exception of a short time the last of June and first of July.

65. **Carpodacus mexicanus frontalis.** HOUSE FINCH.—Common in the hills everywhere until about April 15.

66. **Spinus psaltria.** ARKANSAS GOLDFINCH.—A few were seen about Thompson's Spring, a water hole in the Little Hachita, April 26–30.

67. **Calcarius ornatus.** CHESTNUT-COLLARED LONGSPUR.—In 1886 large flocks were seen along the railroad and on the plain between Apache and Hachita, remaining until April 10. The were very abundant in the same localities as early as October 1, 1889.

68. **Rhynchophanes maccownii.** MCCOWN'S LONGSPUR.—Only observed along the line of the Southern Pacific from October until February.

69. **Poocætes gramineus confinis.** WESTERN VESPER SPARROW.—A very abundant species in all of the region visited during the spring migration, confined largely to the lower ranges. They were still rather rare at the time of my leaving Apache, October 19.

70. **Ammodramus sandwichensis alaudinus.** WESTERN SAVANNA SPARROW.—A Savanna Sparrow was seen at Apache on two occasions in May, but as it was not taken its identity is, perhaps, somewhat doubtful.

On several occasions a small Sparrow was seen on the plain below Apache which I was strongly inclined to think was *A. bairdii*. No specimens were taken however.

71. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW.—Very abundant at Apache during both migrations, more so in spring than in fall, flocking with Vesper Sparrows along the cañons and hillsides.

72. **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW.—White-crowns were very abundant about Apache from late February until the last of April, and I think *Z. l. intermedia* and *Z. leucophrys* were equally common. As few specimens were taken the status is somewhat doubtful.

73. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.—Very abundant as a migrant.

74. **Spizella pallida.** CLAY-COLORED SPARROW.—Rather common as a migrant, staying more along the plain and edges of the higher land than the preceding species, which confined itself largely to the slopes of the lower mountains.

75. **Spizella breweri.** BREWER'S SPARROW.—More common than *pallida*, with which it was found.

76. **Spizella atrigularis.** BLACK-CHINNED SPARROW.—A single specimen secured October 9, 1889, from the top of the Little Hachita, and one seen November 24 in the Sierra Hachita or Big Hachita twenty-five miles south of the first-named locality, are my only records.

77. **Junco hyemalis shufeldti.** SHUFELDT'S JUNCO.—Rather common as a winter resident about Apache and in the ranges to the west.

78. **Junco annectens.** PINK-SIDED JUNCO.—Common as a winter resident, and found in all of the ranges of low hills and mountains visited.

79. **Junco caniceps.** GRAY-HEADED JUNCO.—Common with the preceding as winter resident.

80. **Junco ridgwayi.** RIDGWAY'S JUNCO.—On March 16 a Junco was taken near Apache that in the absence of further material I was obliged to

regard as a hybrid between *caniceps* and *annectens*, although I was reasonably sure that a second was seen on May 21. Upon my return to the region in 1889 the first Junco taken was a fine *ridgwayi*, from a mixed flock of Juncos at Granite Gap, in the Little Hachita, ten miles west of Apache. The species is probably more or less common in all of the mountain ranges in this region, wintering with *caniceps*, *annectens*, and *shufeldti*.

81. **Peucæa cassini.** CASSIN'S SPARROW. — Cassin's Sparrows were first seen at Apache on July 19, and were common in favorable localities after that date until late fall, being in full song until the last. One or two were seen on the plain below Apache, but their favorite resort was a flat at the mouth of a large arroyo south of camp, where the late summer rains had produced a fairly respectable growth of grass and a few vines. Here a few were always to be seen and heard.

82. **Peucæa ruficeps boucardi.** BOUCARD'S SPARROW.—Common at Apache during all of my residence in 1886, but not noticed either at that point or in the Hachita ranges in October or November, 1889. At Apache they seemed to prefer the rocky hillsides, seldom or never venturing below camp. Young in first plumage were taken August 30.

83 **Pipilo maculatus megalonyx.** SPURRED TOWHEE.—A few seen along the arroyos during migrations.

84. **Pipilo chlorurus.** GREEN-TAILED TOWHEE.—During both migrations, more common in fall.

85. **Pipilo fuscus mesoleucus.** CAÑON TOWHEE.—Abundant in all of the mountainous regions visited. Nests found on June 8 and July 31 with nearly fresh eggs. Favorite nesting sites were thick bunches of cholla cactus and between the leaves of yuccas.

86. **Habia melanocephala.** BLACK-HEADED GROSBEAK.—A few during both migrations.

87. **Passerina amœna.** LAZULI BUNTING.—A few were seen in female or immature plumage during the migrations.

88. **Calamospiza melanocorys.** LARK BUNTING.—During the spring migrations but few were seen, but after August 1, and until late in October flocks of thousands were seen on the plains south of the railroad.

89. **Piranga ludoviciana.** LOUISIANA TANAGER.—Met with occasionally in the arroyos about Apache from July 26 until Sept. 26. Most of them were young birds or females.

90. **Piranga hepatica.** HEPATIC TANAGER.—A single adult male was seen near Apache, September 14, and was the only full-plumaged male met with. Young birds and females were not uncommon during the fall migration, but were very shy.

91. **Petrochelidon lunifrons.** CLIFF SWALLOW.—A few were seen September 30.

92. **Chelidon erythrogaster.** BARN SWALLOW.—Seen on one or two occasions at Apache and Deming. A few were seen nesting at the latter place, where large numbers were seen flying south as late as October 1.

93. **Tachycineta thalassina.** VIOLET-GREEN SWALLOW.—Rare during migrations.

94. **Clivicola riparia.** BANK SWALLOW.—A single bird at Apache, July 26.

95. **Lanius ludovicianus excubitorides.** WHITE-RUMPED SHRIKE.—Seen only as a migrant.

96. **Vireo solitarius cassinii.** CASSIN'S VIREO.—During fall migrations, rather common.

97. **Vireo solitarius plumbeus.** PLUMBEOUS VIREO.—Fall migrant, seen as late as September 25.

98. **Vireo vicinior.** GRAY VIREO.—Rare. A few were taken during spring and summer.

99. **Helminthophila virginiæ.** VIRGINIA'S WARBLER.—A male shot near Apache, August 23, is the only record.

100. **Helminthophila celata** (?). ORANGE-CROWNED WARBLER.—Occurred only as a rare migrant, one taken during each migration.

101. **Dendroica æstiva.** YELLOW WARBLER.—Seen only in the fall, when females were not uncommon. No males observed.

102. **Dendroica auduboni.** AUDUBON'S WARBLER.—A common migrant throughout the region, frequently seen far out on the plain foraging in the greasewood.

103. **Dendroica nigrescens.** BLACK-THROATED GRAY WARBLER.—Seen but once during spring, but not uncommon in the juniper growth during the fall migration.

104. **Dendroica townsendi.** TOWNSEND'S WARBLER.—Specimens were taken at Apache April 23 and August 2, and at Hachita September 28. It is, perhaps, not rare as a migrant.

105. **Geothlypis macgillivrayi.** MACGILLIVRAY'S WARBLER.—With the possible exception of *Sylvania pusilla*, the most abundant of the Warblers, being flushed by dozens from every bunch of mesquite and greasewood along the arroyos and well into the higher hills. Most abundant from August 3 to October 12.

106. **Geothlypis trichas occidentalis.** WESTERN YELLOWTHROAT.—Two specimens were taken at a water hole in the Little Hachita, April 30 and May 31.

107. **Icteria virens longicauda.** LONG-TAILED CHAT.—Seen but once, September 15, near Apache.

108. **Sylvania pusilla** (?). WILSON'S WARBLER.—Very abundant as a migrant. Usually seen with Macgillivray's Warbler along the arroyos.

109. **Setophaga picta.** PAINTED REDSTART.—A fine male was taken August 31. Probably more common in the Sierra Hachita.

110. **Anthus pensilvanicus.** AMERICAN PIPIT.—A few were seen in October on the plains and along the line of the railroad.

111. **Oroscoptes montanus.** SAGE THRASHER.—At Apache I found Sage Thrashers abundant from the time of my arrival, February 28, until the last of March, and after September 1. They showed a marked prefer-

ence for the arroyos and rocky hillsides, but were frequently seen on the plain several miles from the mountains.

112. **Harporhynchus curvirostris palmeri**. PALMER'S THRASHER. — Several pairs of Palmer's Thrashers were found at Apache during the spring migration. At Hachita I found them on several occasions in October and November, but owing to their extreme shyness very few were secured.

113. **Harporhynchus crissalis**. CRISSAL THRASHER.—Found in about the same numbers and at the same time as the preceding species. Neither of them bred in the vicinity of Apache. At Deming, however, the present species was found in comparative abundance throughout the season.

114. **Campylorhynchus brunneicapillus**. CACTUS WREN. — Common throughout the region, showing a marked preference, however, for the lower ranges of the mountains. Nests were found in mesquite or other thorny bushes as well as cactus. Usually from four to ten nests were seen in the same bush or in the immediate vicinity, a circumstance I was at a loss to account for until I discovered that the birds were in the habit of patching up nests of the preceding seasons and rebuilding them for use as shelters during winter. (See Zoe, Vol. II, p. 133.)

115. **Salpinctes obsoletus**. ROCK WREN.—Very abundant in all of the mountain ranges, and to a large extent resident; more common, however, in winter. A nest was found, July 11, several feet below the surface of the ground in a mine that was being worked day and night. How the nest and eggs escaped being destroyed by the blasts, which were fired within a few yards of them several times each day, is a puzzle to me.

116. **Catherpes mexicanus punctulatus** (?). DOTTED CANON WREN.—A few were seen on the Hachita ranges in October and November, 1889.

117. **Thryothorus bewickii bairdi**. BAIRD'S WREN.—Rather common at both Apache and Hachita during the migrations, frequently seen far out on the open plain.

118. **Troglodytes aëdon aztecus**. WESTERN HOUSE WREN. — Rather rare, but seen during both migrations.

119. **Auriparus flaviceps**. VERDIN.—Well distributed throughout the region, but by no means common at any point visited. Evidently resident, but no nests were discovered.

120. **Regulus calendula**. RUBY-CROWNED KINGLET.—Rather abundant in the mountains during the migrations. All of those taken show a marked grayness on the upper parts, not noticed in specimens from other regions.

121. **Polioptila cærulea** (?). BLUE-GRAY GNATCATCHER.—First seen April 1. Although not so abundant, during summer as in spring, many were seen throughout the season, and several broods of young were noted.

122. **Polioptila plumbea**. PLUMBEOUS GNATCATCHER.—A pair seen, and the male secured, April 4. I do not think it was again met with.

123. **Polioptila californica**. BLACK-TAILED GNATCATCHER.—In my notebook, under the date of April 4, I find the record of the capture of a bird

of this species. The specimen has been mislaid, however, and I am unable to verify the identification at the present time, which leaves the record somewhat doubtful.

124. **Myiadestes townsendii.** TOWNSEND'S SOLITAIRE.—Seen at Hachita on one or two occasions in October and November, and on the plain east of Apache, April 30.

125. **Turdus aonalaschkæ.** DWARF HERMIT THRUSH.—A few were met with in the hills until late in May.

126. **Turdus aonalaschkæ auduboni.** AUDUBON'S HERMIT THRUSH.—Rather less common than the preceding.

127. **Merula migratoria propinqua.** WESTERN ROBIN.—A few were seen at Apache the first week in April. Not again met with until August 7. Rare at Hachita in October.

228. **Sialia mexicana.** WESTERN BLUEBIRD.—Abundant everywhere during both migrations.

129. **Sialia arctica.** ARCTIC BLUEBIRD.—Abundant with the preceding species. A few probably winter in the mountain ranges.

OBSERVATIONS ON THE BIRDS OF JAMAICA, WEST INDIES.

BY W. E. D. SCOTT.

I. A LIST OF THE BIRDS RECORDED FROM THE ISLAND, WITH ANNOTATIONS.

(*Continued from p. 277.*)

In the July number of 'The Auk' it was stated that Mr. Taylor's notes on some of the birds there treated had not come to hand, and would be given later. They have since been received and are as follows.

124. **Crotophaga ani** (*Linn.*).—The Ani appears to be abundant in all parts of the island. It is one of the commonest birds near Kingston; and in most open or sparsely wooded lands, or in the vicinity of cultivated clearings, little groups or companies may nearly always be seen. Blackbirds are invariably present wherever cattle are pastured. I cannot recollect an instance in which I have noted a herd of cows at pasture without a flock of these birds appearing in company with them or in their immedi-

ate vicinity. This association is doubtless chiefly for the purpose of feeding on the ticks and other parasites on the animals, a good work largely shared by the Grackles (*Quiscalus crassirostris*). It is most interesting to watch a company of Blackbirds when thus engaged. Many are perched on the backs of the cattle (two or three sometimes on one cow), others are on the ground hopping about fearlessly among the grazing herd, searching for insects at the roots of the herbage or capturing those disturbed by the feet of the cattle. At this time one or more individuals are stationed on some tree close by, from which they now and again call to those in the open with that remarkable cry, variously syllabicated by some, but which I have at times thought strangely like the wailing of a young cat. Insects of all orders and their larvæ, ticks, grubs, etc., form their chief food. Occasionally perhaps a few small lizards are taken, and, I believe, the eggs of other birds, as I once found in the stomach of a female portions of an egg, apparently that of some small bird. Gosse records having seen these birds eating the ripe berries of the fiddle wood, but I have not noticed them at any time eating vegetable food.

The Blackbirds at their best have a very lean and shabby appearance, and are slow and awkward in their movements. I have watched an individual make several ineffectual attempts to alight on the frond of a cocoanut palm; but even among the branches of other trees their actions appear awkward. Their flight is slow and gliding, somewhat labored, and of little duration, the birds often appearing to fall short of the point originally aimed at. Yet they will chase the large yellow butterflies, and I was shown a large green locust that one of these birds was seen to capture in flight and afterwards drop. In the progress of a flock from place to place they do not usually fly all together, but move away in straggling groups or couples. One or more individuals first start off with their wailing call, followed soon after by two or three; after a little delay then two more go; another pause, then one, then three, and so on. If a tree has very dense foliage they alight (with much awkward scrambling) on the tops or extremities of the highest branches, where they may gain a clear and uninterrupted view, and this is usually the case when they are traversing very open country.

Their nesting habits are exceedingly curious and interesting. Many individuals (possibly members of one flock) work together in the construction of a large nest in which all the females of the company lay their eggs. The number of eggs deposited in different nests varies greatly but is of course dependent on the number of birds in a company. Six and eight eggs are commonly found. I once took eleven, and in August last year I saw a clutch of twenty-one that had been taken from a single nest! It is probable that normally not more than two eggs are deposited by each bird, but nothing definite can be said on this point. The nest, which is usually placed high up in a tall tree, very frequently in a clump of mistletoe on a 'bastard cedar,' is a large, loosely constructed mass of twigs, entirely lined with dried leaves. But the most remarkable circumstance in connection

with the nesting of these birds is the deposition of the eggs in *regular layers* with leaves between. This custom I had long heard of before an opportunity offered for personal observation. In the first nest I examined, the eggs were in two distinct layers, separated by a deep bed of dry leaves; the bottom layer consisted of four eggs and these, strange to say, were all infertile. I believe this singular habit is practised in all cases where a large number of birds resort to the same nest. The eggs are a deep bluish green, but when freshly laid are covered with a white chalky coat which soon becomes much scratched and erased on all. Now what seems very singular is that comparatively little of this chalky covering gets rubbed off the sides, where from the turning over of the eggs in the nest we should expect to see the greatest extent of denudation, whereas *one* or *both ends* are nearly always *wholly* denuded. That this circumstance is not merely accidental I feel sure, as in a large series of clutches that I have examined more than two thirds of the number of eggs show this peculiarity. So cleanly and evenly is it done, and to such an extent, that I feel confident it is the work of the birds themselves, their beaks alone being able to accomplish it. At the same time it is easy to see that the marks and scratches at the sides are the result of friction with the twigs and leaves of the nest. Average measurements of the eggs are 1.33 × 1.20 inches. I have found eggs and young, in February and throughout the succeeding months to August, two or three broods probably being reared. I have also seen young, fully fledged but unable to fly, hopping about the branches of the nesting tree, and on another occasion, some, more advanced, searching for insects in the grass at the roots of a large guango tree in company with many old birds.

125. **Saurothera vetula** (*Linn.*).—The habits of this bird have been well described by Gosse. I am most familiar with it as a resident of the lowlands, though doubtless it is well dispersed over mountain and plain. At one time it occurred commonly in many of the dry gullies near Kingston as well as in some dense and unfrequented tracts of forest along the base of the Long Mountain; of late, however, I have not met with it again in these localities. This species seems to prefer the thickest woods, where it can pass by short flights from tree to tree. On alighting in a bush or tree, it traverses the branches with facility by a succession of vigorous jumps, when it appears active enough. Usually, however, it will sit on a twig in a dull and sluggish manner, scarcely if at all disturbed by the approach or passing of people. If observed too closely, it will move slowly from branch to branch, peering down through the leaves with the greatest apparent curiosity, all the while assuming very odd postures in its desire to scrutinize the intruder. I can fully bear out the remarks by Gosse as to the fierceness of this bird when taken in the hand. One that had been struck down by a stone from a catapult, and only stunned, could not be held until its beak had been secured; this individual I kept in a cage for a few days. It appeared quite reconciled to confinement, and greedily devoured lizards and roaches, snatching

eagerly at the former the instant they were presented. I always offered the lizards alive, tied at the end of a short thread, when they would be seized and instantly swallowed. Although the object of constant and diligent search, I never succeeded in finding the nest of this species, and I had even begun to despair of obtaining any reliable particulars concerning its mode of nesting. Late in the year 1890, however, a friend, then resident in the Vere district of the Parish of Clarendon, wrote me, saying that he had discovered a nest of this bird, which he described as a loose, flat structure of twigs; it was placed high up on a large tamarind tree and contained one egg. The egg remained in his possession for some time and was eventually broken, so that little more than half of the shell came into my possession. In shape it appeared to have been round-oval, the surface rough or chalky, and in color wholly dull white. I judged it to have been about the size of an average egg of the Savanna Blackbird (*Crotophaga ani*).

126. **Coccyzus minor** (*Gmel.*).—This Cuckoo I have found to be fairly common in the lowlands of Kingston and St. Andrew. At Port Henderson we frequently met with it among the mangrove thickets, and in the low, swampy lands near the seashore. I am not satisfied, however, that all the examples seen can be safely referred to this species; some individuals appeared smaller and paler and may have been representatives of the Florida variety, *C. m. maynardi*. As, however, I did not procure specimens for identification, the point remains unsettled. Between the months of June and August, several Cuckoos' nests with eggs were taken in the localities just mentioned. Of these a certain proportion can doubtless be safely ascribed to the present species, but in many cases the question of identity was invested with difficulty, *C. americanus* being also a common resident species, frequenting the same localities and nesting in just the same manner as *C. minor;* the points of difference, too, between the species are not such as could be clearly indicated to or appreciated by the native collectors, to whom we were indebted for most of the eggs obtained. Nests were occasionally found in mangrove clumps, more often in the spreading cashaw trees; they were always of the rudest possible construction, just half a dozen or more slender twigs laid without any pretense to arrangement, barely serving to accommodate the eggs; these differ in no appreciable respects from those of *C. americanus*.

127. **Coccyzus americanus** (*Linn.*).—The Yellow-billed Cuckoo, as stated above, frequents the woods and mangrove thickets at Port Henderson, where we met with it daily. Of the few well authenticated eggs obtained, four now in my possession, taken as late as August 1, were fresh. I have already referred to this Cuckoo as a resident species, though in all probability it may be found to be partially migratory. When at the Morant Cays in April, 1890, one or more of these birds haunted the low bushes along the shores, disappearing, however, in the course of a few days.

128. **Hyetornis pluvialis** (*Gmel.*).—No notes. I have not met with this species.

129. **Ceryle alcyon** *Linn.* — Occurs commonly in Kingston harbor during the winter months. Individuals remain certainly until late in April.

130. **Todus viridis** (*Linn.*). — The Green Tody, or 'Robin' as it is familiarly called, appears to be very generally dispersed throughout the island and may even be said to be common in most parts. In all localities that I have visited, whether on the mountains at high elevations or among the woods of the plains, it has appeared equally abundant at all seasons. Banks of ravines and gullies, where the fringing forest is of dense and varied, but slender, growth, hedges with deep banks, woods and thickets bordering many roadways, and especially the steep, narrow bridle paths that wind up the mountain sides, where the banks are high, may be mentioned as some favored haunts. But of all localities there are few perhaps where these birds occur constantly in such numbers, or which offer more perfect situations for nesting than the gullies before mentioned. Many of these dry water-courses, that during prolonged rains become transformed into rushing, impassable torrents, are of considerable extent, and their sandy beds may be traced for miles inland. One gully in particular, where most of my observations on the habits of the Todies have been made, has a wide and tortuous course and banks that vary in places from low weed-covered mounds, to precipitous cliffs of clay between ten and twenty feet in height. In their choice of a situation for nesting, the birds are somewhat particular, preference being given to low, overhanging, weed-covered banks where the soil is light and friable. The tunnels are rarely, if ever, in high situations, but on the contrary may frequently be found at the sides of the shallow ditches and hollows that are commonly formed in soft soil during heavy rains. I have often surprised the Todies at work. In beginning a tunnel they cling in an awkward manner to the face of the cliff or bank, fluttering the wings frequently as if for support. So far as I have been able to observe, in digging they appear to employ the beak only, and I once took a Tody that had almost the entire half or side of the upper mandible worn away; this, however, was during a period of drought, when all vegetation was burnt and shrivelled, and the earth hard and unyielding. In most cases the whole work of excavation would seem to be performed by the birds, yet, I have noticed (in the gullies at least) that those portions of the banks usually selected for nesting are nearly always riddled with holes and cavities of different depths. Whether the birds ever take possession of one of these, or enlarge others to suit their needs, I have not discovered, but such a proceeding would seem highly probable in view of the labor which the work of excavation frequently entails. When digging into some of these holes in a search for the true nest of a Tody, I often find them in the occupation of strange tenants, such as field mice, lizards and spiders; the latter, black repulsive looking objects, are of common occurrence, especially in the depressions formed by the falling away of stones, etc.; so that some little caution is necessary in prosecuting a search for the eggs of the

bird. The burrows run horizontally and to a considerable depth, but invariably (so far as my experience goes) turn at right angles at a few inches from the entrance The tunnel terminates in a somewhat rounded cell, where, upon a little heap or bed of fine soft earth, *without any lining whatever*, the eggs are laid; these are usually three or four in number, almost globular, glossy, and of a beautiful pearly white, except that, when fresh, the contents impart a delicate pink tinge to the shell; they are in fact miniature Kingfishers' eggs. Average measurements: .59 × .48 inch.

The Tody breeds early in the year. I have seen young in the nest in April, and have also taken fresh eggs in June, so that probably more than one brood is reared in a season. Below are a few dates on which I have found or taken sets of eggs, all fresh: May 19, clutch of 3; May 20, 3; and May 24, 4; June 2, 2.

The account of the nesting of the Tody, communicated to Gosse by the late Richard Hill ('Birds of Jamaica,' p. 77), is in some respects incorrect, and obviously is not the result of personal observation, for it is difficult to understand how any one familiar with the nesting of the birds could fall into the error of speaking of the eggs as "grey, brown-spotted" With respect to the "nest" or lining of "pliant fibres and dry moss and cotton" which Hill expressly states is used, I can only say that my experience does not bear out that assertion. On no occasion have I found anything like an attempt at a nest or lining, as described above, and I have examined scores of nest-holes of this bird in many different localities.

The tameness of the Tody is well known, but, as Gosse well remarks, this seems rather the tameness of indifference than of confidence. I have accomplished the capture of specimens with a butterfly net at different times with little difficulty, and frequently a Tody has permitted so near an approach that I have been tempted to put out my hand in the hope of taking it

The Todies keep in pairs, if not constantly, for the greater part of a season at least, and during nidification seem to range over a very circumscribed space. Their food appears to consist exclusively of small insects which they usually pursue and take after a short flight, returning constantly to the same twig, where they will patiently sit and watch, with head drawn in and beak pointing obliquely upwards, the plumage much puffed out; the wings meanwhile being flirted by a continuous, rapid, vibratory movement.

132. **Sphyrapicus varius** (*Linn.*).—A winter visitor, concerning whose habits I have no notes. Specimens in the Museum are labelled St. Georges, Portland, January.

133. **Centurus radiolatus** (*Wagl.*).—A bird of common occurrence in all well wooded districts, though I have never noted it near Kingston. Among the spreading guango trees that shade the large grass pastures of many cattle-pens in the lowlands, this Woodpecker may nearly always be seen. In one such situation near Port Henderson where there was quite a forest of guango trees, including many of unusual size, I have

counted more than a dozen of these birds within an area considerably less than an acre in extent. In the same locality, too, I have on more than one occasion surprised a Woodpecker feeding on the brilliant scarlet berries of the 'clammy-cherry'; they will also eat the berries of the pimento and, as I am assured, the fruit of the wild fig.

I have seen the nest holes of this species but the situations were always too inaccessible to admit of my examining them. Three eggs in my collection, from the Parish of St. Thomas, measure 1.11 × .74 inch.

RECENT LITERATURE.

Bendire's 'Life Histories of North American Birds.'*—The first of a series of volumes, entitled as above, is now before us. It treats of 146 species and subspecies, beginning with the Grouse and ending with the Owls, thus including the Gallinaceous Birds, the Pigeons, and the Birds of Prey. This long contemplated work, all things considered, could not have fallen to better hands, or appeared under more favorable auspices. It early interested the late Professor Baird, who for many years cherished the plan of publishing, under the auspices of the Smithsonian Institution, a comprehensive work on this subject. It was begun, indeed, as early as 1857, when a small volume was published on the Hawks and Owls, under the authorship of the late Dr. T. M. Brewer. It was found necessary, however, to discontinue the enterprise, for lack of sufficient material. During the thirty-five years that have since elapsed, not only has our knowledge of the subject greatly increased, but the materials for description and illustration have multiplied many fold. While there are still deficiencies, they are comparatively few, and perhaps the best way to supply them is to publish what is known and thus the more pointedly draw attention to the gaps in our knowledge of the subject. In a work of this magnitude it is a great thing to have made a start, and we trust the present volume is but the forerunner of a series of volumes to appear at frequent intervals till the grand undertaking is completed.

Captain Bendire's method of treatment seems well chosen; the matter, as too often is the case in 'egg-books,' is not limited to a description of nests and eggs, but includes, as the title implies, the general life histories of the species treated—their geographical distribution, their migrations,

* Smithsonian Institution. | United States National Museum. | Special Bulletin No. 1. | — | Life Histories | of | North American Birds | with special reference to | their Breeding Habits and Eggs, with | Twelve Lithographic Plates. | By | Charles Bendire, Captain, U. S. Army (Retired), | Honorary Curator of the Department of Oölogy, U. S. National Museum, | Member of the American Ornithologists' Union. | — | Washington: | Government Printing Office. | 1892.—4to, pp. viii, 414, and 12 co ed plates.

their breeding ranges, their nesting habits, and their food In many cases, in respect to materials, as in the case of well-known species, there is an embarrassment of riches, and the question is what to select and how much is really worthy of reproduction. In many cases, however, it is far otherwise, and the striking feature of Captain Bendire's work is the amount of wholly new material it contains, drawn either from his many years of personal experience in the field, largely in comparatively unknown portions of the Far West, or from the letters of his many correspondents in all parts of the country. Much of this original information has evidently been especially solicited for the present work.

Captain Bendire's style is simple and direct, with no attempt at embellishment or literary effect, but this is more than compensated by the care and thoroughness with which every aspect of the subject is presented. Doubtless there are some deficiencies of detail that might have been remedied, but as a whole the book is eminently satisfactory as a compendium of the subject of which it treats. It is unencumbered with tables of synonymy and bibliographical references, although due credit is given in foot notes to the sources from which previously published information has been drawn. In his official capacity as Curator of the Department of Oölogy in the United States National Museum, recently so greatly enriched by his own unrivalled collection, he has had the fullest access to abundant material, which, however, he has been able to supplement when necessary by that of scores of willing collaborators in the same field. The illustrations are on a liberal scale, and in execution are above criticism. It is perhaps safe to say that they are the best egg plates, taking the series as a whole, ever produced, at least in this country and probably anywhere.—J. A. A.

Ridgway's 'The Humming Birds.'*—Under this title Mr. Ridgway has made a most welcome contribution to the literature of this fascinating group of birds, giving as it does a general account of their structure and habits, and a detailed account of the species met with in the North American fauna, as limited in the A. O. U. Check-List. He gives first a brief summary of the literary history of the group, extracted largely from Coues's well-known bibliography of the family, followed by remarks on 'Geographical Distribution' and 'Migrations.' Then follows an account of their 'Habits,' their general traits being discussed under the minor headings, 'Actions and Attitudes,' 'Manner of Flight,' 'Disposition,' 'Intelligence,' 'Nests and Eggs,' and 'Food,' the whole occupying about twenty pages. The nidification of Hummingbirds is illustrated by fourteen plates of nests, three of which are original and the rest from Gould. Under 'Characters and Relationships' are discussed their affinities to

* The Humming Birds. By Robert Ridgway, Curator, Department of Birds. Report of the U. S. National Museum for 1890, pp. 253–383, with pll. xliii and 47 cuts in the text. [July, 1892.]

other birds, this section including also a contribution on the anatomy of Hummingbirds by Mr. Frederic A. Lucas (pp. 290–294, pl. xv, and figs. 1–4). Under 'Variations' are described and profusely illustrated the wide range of external structure, as affecting the general size, the form and structure of the bill (figs. 5–14), the wing (figs. 15–25), and the tail (figs. 26–29, and pll. xvi–xxiv, in all 45 figures), and also the head and throat ornaments, etc., (Figs. 30–46, and pll. xxvi–xxxiv). By means of the copious illustrations a very good idea is conveyed of the very diverse forms of structure of bill, wings, tail, and head ornaments present in the various groups of this exceptionally numerous and diversified family. A few pages are given to 'Colors of the Plumage,' and 'Cause of the Changeable Hues of Humming Birds,' with brief descriptions of some of the more brilliantly colored species.

The last half of the paper (pp. 312–383) is devoted to 'Humming Birds of the United States.' These number seventeen species, of which only seven can be considered as characteristic of the region, the other ten either barely crossing our border or being of purely casual occurrence. The 'Key to the Genera' given, however, includes all of the genera found in Mexico, Cuba, and the Bahamas, as well as in the United States, being in fact an 'adaptation' of that given in the same author's 'Manual of North American Birds.' Uncolored original figures are given (pll. xxxv–xlvi) of thirteen of the species, including *Trochilus violajugulum* Jeffries, and *Selasphorus floresii* Gould, the former known only from the type, the other "accidental near San Francisco, California," and known only from this and one other specimen, the latter from Bolaños, Mexico

Detailed descriptions are also given of several species wrongly attributed to North America, namely: *Lampornis nigricollis* (Vieill.), a South American species attributed to Florida by Audubon; *Atthis heloisa* (L. & DeL.), of Eastern Mexico, wrongly attributed to El Paso, Texas, through misidentification of a young example of *Stellula calliope;* and *Agyrtria tobaci* (Gm.), of northern South America, supposed (in all probability erroneously) to have been taken at Cambridge, Mass.

A vast amount of general information about Hummingbirds is thus brought together, in addition to an elaborate and very detailed account of those occurring north of the West Indies and Mexico, with some account of their nearest congeneric allies found in the contiguous regions to the southward.—J. A. A.

Merriam on the Life Areas of North America.—In his recent Presidential Address before the Biological Society of Washington Dr. Merriam* resumes consideration of the geographic distribution of life in North America, a subject already treated by him at some length in 'North Amer-

* The Geographic Distribution of Life in North America with Special Reference to the Mammalia. Annual Presidential Address, delivered at the Twelfth Anniversary Meeting of the Biological Society of Washington, February 6, 1892. By C. Hart Merriam, M. D. Proc. Biol. Soc. of Washington, Vol. VII, pp. 1-64, with map. April, 1892.

ican Fauna' (No. 3, Sept. 1890, and No. 5, Aug. 1891. See Auk, VIII, pp. 95–98). In this paper he gives (after a few pages of introductory remarks) a general historical review of the subject (pp. 6–21), followed by an extended discussion of the 'Life Regions and Zones of North America' (pp. 21–38), and closing with an exposition of the 'Causes controlling Distribution,' including 'Remarks respecting some of Wallace's Fallacies (pp. 39–64). The historical synopsis of the proposed faunal and floral divisions of North America gives, in tabular form, the views of 56 different writers on the subject, ranging in date from 1817 to 1891, of whom 31 were zoölogists and 25 botanists. From this synopsis it appears "that a number of zoölogists and botanists, basing their studies on widely different groups, and as a rule ignorant of the writings of their predecessors, have agreed in the main in the recognition of at least seven (7) life areas in extratropical North America, namely: (1) an *Arctic area* north of the limit of tree growth; (2) a *Boreal transcontinental coniferous forest region;* (3) *an Atlantic or Eastern wooded region,* stretching westward from the Atlantic to the Great Plains; (4) a *Central or Middle region* reaching from the Plains to the Sierra Nevada and Cascade Mountains; (5) a *Pacific or Californian division,* covering the area between the east base of the Sierra and the Pacific Ocean; (6) a *Louisianian or Austroriparian division,* comprising the South Atlantic and Gulf States south of latitude 36°; (7) a *Sonoran division,* occupying the high table land of Mexico and stretching northward over the dry interior far enough to include the southern parts of California, Nevada, Arizona, New Mexico, and Texas" (p. 21). In addition to this it has of late been the custom of zoölogists, or more particularly ornithologists, to subdivide the eastern portion of North America into a series of lesser divisions or faunas, as (1) the Arctic, (2) the Canadian, (3) the Alleghanian, (4) the Carolinian (5) the Louisianian, and (6) the Floridian.

Dr. Merriam's investigations have led him to adopt a somewhat different classification, which may be presented in tabular form somewhat as follows:

I. Boreal Region.
  1. *Arctic Division.*
  2. *Boreal Coniferous Forest Region.*
    a. Hudsonian Zone.
    b. Canadian Zone.
    c. Timber-line Zone.

Neutral or Transition Zone.

II. Sonoran Region.
  1. *Upper Sonoran Zone.*
    a. Humid Upper Sonoran.
    b. Arid Upper Sonoran.
  2. *Lower Sonoran Zone.*
    a. Humid Lower Sonoran.
    b. Arid Lower Sonoran.

III. Tropical Region.

The Boreal Region, as defined by Dr. Merriam, "extends obliquely across the entire continent from New England and Newfoundland to Alaska and British Columbia, and from about latitude 45° north to the Polar Sea," the southern border, however, receding northward "to about latitude 54° on the plains of the Saskatchewan." It extends southward in three long arms down the "three great mountain systems of the United States—an eastern arm in the Alleghanies, a central arm in the Rocky Mountains, and a western arm in the Cascades and Sierra Nevada." This latter bifurcates, "the main fork following the lofty Cascade and Sierra ranges to about latitude 36°, the other following the coast, gradually losing its distinctive characters . . . . until it disappears a little north of San Francisco" (pp. 22, 23). It is divided into (1) an Arctic division, and (2) a Boreal Coniferous Forest division (p. 24). The Arctic division corresponds to the 'Arctic Realm,' 'Arctic Region,' 'Arctic Province,' etc., of nearly 30 previous writers on the subject, of whom about three fourths have accorded it a rank of the first class, and about one fourth as a region of the second class or grade, as is done by Dr. Merriam. The Boreal Coniferous Forest division is about equivalent to the Hudsonian and Canadian faunas (of most recent writers) combined, with their extension westward to the Pacific coast. These subdivisions are referred to by our author as forming "at least two transcontinental zones," called by him respectively 'Hudsonian Zone' and 'Canadian Zone'; he also says "a third or Timberline Zone may be differentiated from the Hudsonian proper" (p. 24).

The Sonoran Region is described as stretching "across the continent from Atlantic to the Pacific, covering nearly the whole country south of latitude 43° and reaching northward on the Great Plains and Great Basin to about latitude 48°," excepting of course the areas along the three principal mountain systems occupied by the southward extension of the Boreal Region, as already explained. "To the southward it occupies the great interior basin of Mexico and extends into the tropics along the highlands of the interior," and covers all but the extreme southern part of the peninsula of Lower California (p. 26). The Sonoran Region is divisible "into two principal transcontinental zones (*a*) *Upper Sonoran*, and (*b*) *Lower Sonoran*; and each of these may again be subdivided into *arid* and *humid* divisions" (p. 27). The 'humid division' of the Upper Sonoran "comprises the area in the eastern United States commonly known as the Carolinian Fauna," and merges into the 'arid division' of the Upper Sonoran near the 100th meridian. The arid division spreads over the Great Plains, reaching an altitude of about 4000 feet along the eastern foot of the Rocky Mountains in the latitude of Colorado, and extending obliquely northward along the Missouri through North Dakota and into eastern Montana. "Another subdivision of the arid Upper Sonoran occupies the greater part of the Great Basin between the Rocky Mountains and the High Sierra, reaching northerly . . . . to and including the plains of the Columbia and Snake Rivers." There is also another area

in the interior basin of California, occupying the valley of the Sacramento and San Joaquin Rivers, and a branch extends along the coast between Monterey and the Santa Barbara plain (p. 30).

The 'humid' division of the Lower Sonoran corresponds to what has been commonly termed the Lousianian Fauna, or the 'Austroriparian' of some writers. "It begins on the Atlantic seaboard at the mouth of the Chesapeake Bay and stretches thence southwesterly, embracing the alluvial lands of the South Atlantic and Gulf States below what geologists know as the 'fall line,' rising in the Mississippi bottom as far as the junction of the Ohio with the Mississippi, and following the former in a narrow strip to the point where it receives the Wabash. On the west side of the Mississippi it crosses Arkansas, reaching southern Missouri and southeastern Kansas, and spreads out over Indian and Oklahoma Territories and Texas, where it loses its moisture and merges insensibly into the arid Sonoran" (p. 28). The 'arid' Lower Sonoran extends thence westerly, "covering southern New Mexico and Arizona south of the plateau rim (sending a tongue up the Rio Grande to a point above Albuquerque), the west side of which it follows northerly to the extreme northwestern corner of Arizona and the southwestern corner of Utah (where it is restricted to the valley of the lower Santa Clara, or St. George Valley), and thence westerly across Nevada, ... and thence curving southwesterly . . . . covers the whole of the Mohave and Colorado Deserts and all the rest of southern California except the mountains." It also includes most of the peninsula of Lower California, and occupies a small area in the San Joaquin and Sacramento Valleys (p. 28). Respecting Lower California he adds: "It is evident, however, that the peculiar fauna of the peninsula of Lower California entitles it to rank as a minor subdivision of the Lower Sonoran Zone. It is in effect an insular fauna of recent origin, bearing the same relation to that of the main land as do several of the adjacent islands" (p. 30).

Between the Boreal and Sonoran Regions Dr. Merriam recognizes what he terms a 'Neutral or Transition Zone,' which has also a humid and an arid division. The former corresponds to what is generally known as the Alleghanian Fauna, while the arid division is its western equivalent. It forms for the most part a pretty broad belt, characterized by the overlapping of boreal and 'Sonoran' types. This 'Transition Zone,' as described in the text and as laid down on the accompanying map, suggests one or two troublesome queries. How, for example, is this 'Transition Zone' to be classified—as a part of the 'Boreal Region' or as a part of the 'Sonoran Region?' or does it belong to neither? If so, what is its status? Obviously, so far as nomenclature goes, it is that of a minor region interposed between, and thus wholly separating, two primary regions! It is apparently co-ordinate in rank with the 'Upper Sonoran' and the 'Lower Sonoran' Zones, respectively, and also with the 'Hudsonian' and 'Canadian' zones. While we are willing to accord it this rank, and are thus in agreement with our author so far as the facts are concerned, we should much

prefer to assign it definitely to one or the other of the contiguous regions, and if called upon to make the assignment we should with little hesitation add it to the so-called 'Sonoran' Region, with which on the whole it seems to be most closely related.

In this connection we would reiterate our protest (see Auk, VIII, p. 98, last part of last paragraph) against the use of the term *transitional* as a specific designation for any faunal area of whatever grade or character. Until nature devises some means of erecting hard and fast barriers abruptly limiting the habitats of animals, there must be between any two contiguous faunal areas a belt of neutral or transitional territory, more or less marked according to circumstances. The Hudsonian Zone, for example, is a 'transition' zone between the Arctic and Canadian, or at least its northern half may be so considered, while the Lower Sonoran Zone is likewise 'transitional' between the Tropical Region and the Upper Sonoran; and so on.

"The Tropical Region reaches the United States at two remote points—Florida and Texas. In the former it exists as a narrow subtropical belt encircling the southern half of the Peninsula from Cape Malabar on the east to Tampa Bay on the west. In Texas it crosses the Lower Rio Grande from Mexico and extends north to the neighborhood of the Nueces River. In western Mexico the Tropical Region reaches Mazatlan" (p. 33).

Dr. Merriam considers his subject especially from the standpoint of mammals, and tabulated lists of the genera and species distinctive of the different zones and life areas are given. Yet his consideration of the subject is by no means limited to this class of animals, but relates as well to plants and land animals in general. After passing in review the special subject of his address, he devotes considerable space to the consideration of general subjects, discussing at some length the influence of the glacial period upon the present character and distribution of life in North America and the origin of its present fauna. He also considers the causes controlling distribution, and emphatically identifies himself with the long list of eminent authorities who believe that the solution of the whole question may be found in climatic conditions. In this connection attention is called to Mr. A. R. Wallace's assumption that temperature has comparatively slight influence upon the distribution of animal and vegetable life, and especially to his various misstatements and erroneous assumptions respecting the distribution of life in North America and the limiting effects of mountain barriers to its distribution. In commenting on the so-called 'Nearctic' and 'Palæarctic' Regions of Sclater, he shows that of the 31 'boreal' genera of North American mammals 77 per cent are common to Boreal America and Boreal Eurasia. Facts of similar import are cited in reference to insects. In conclusion Dr. Merriam observes: "I see no reason why a homogeneous circumpolar fauna of great geographic extent should be split up into primary regions possessing comparatively few peculiar types simply because a water separation happens to exist in the present geologic period; nor is it evident why one of the resulting feeble divisions should be

granted higher rank than a region of much less geographic extent comprising several times as many peculiar types. Hence the divisions here recognized, and the rank assigned them, are based as far as possible upon the relative numbers of distinctive types of mammals, birds, reptiles, and plants they contain, with due reference to the steady multiplication of species, genera, and higher groups from the poles toward the tropics."

Dr. Merriam's studies of the life areas of North America have evidently had a wide scope, and have been prosecuted systematically and with great thoroughness. His historical review of what has been done in this field by previous workers, including a collation and tabulation of their results, is alone a most useful and important contribution to the subject, as well as an admirable preparation for further research. His experience in the field also has given him the rare advantage of a personal knowledge of a large part of the area he attempts to treat, and the opportunity of studying on a grand scale the relation of cause and effect in the distribution of animal and vegetable life. Besides possessing great familiarity with the literature of the subject, he has at his command a mass of as yet unpublished details resulting from years of field work on the part of himself and a large corps of collectors and assistants, systematically directed for the express purpose of accumulating data bearing on the distribution of life in North America. With such resources at his command one may well hesitate to criticise his results, as unfolded in his several papers above cited. Yet there are some points we had hoped to see settled that are still left in abeyance, one being a consistent and well-grounded system of nomenclature for the various life areas recognized. Hitherto each writer has adopted such designations as seemed to him most convenient, with little regard to preceding systems and terminology. As we hope soon to treat this phase of the subject somewhat in detail in another connection, we will merely add here that so far as Dr. Merriam's areas are concerned, their boundaries, and in the main their assumed relationships, we are in hearty accord with his results. As regards his classification and nomenclature, we should prefer sundry changes, which, however, may not be in conflict with Dr. Merriam's own views. Evidently he has not thus far attempted to present a systematic scheme of terminology, his designations for different areas being descriptive and provisional rather than the outgrowth of a broad scheme of classification, as regards their relative rank and systematic terminology. — J. A. A.

Suchetet on Hybridity in Birds. — The third part of M. Suchetet's work on 'Hybridity among Birds in a Wild State'* treats of the Passeres, and forms about 280 octavo pages. It shows a vast amount of painstaking

* Les Oiseaux Hybrides | rencontrés a l'état sauvage | par | André Suchetet | — | Troisiéme Partie | Les Passereaux | — | Extrait des Mémoires de la Société Zoologique de France | Tome V. page 253, année 1892. | — | Lille | Imprimerie typographique et lithographique le Bigot Frères | 68, rue Nationale, et 9-11, rue Nicolas-Leblanc | 1892. — 8vo., pp. 179-451 + i-v.

research, and seems to cover very thoroughly the literature of the subject. He appears to weigh the evidence, for the most part, very judiciously, but, as he himself deplores (p. 191), he is seriously handicapped in his task by the fact that he is not professionally an ornithologist, and is thus untrained in the technique of the science. He is hence hopelessly at sea where questions of nomenclature, synonymy, and classification are concerned, the status of species and subspecies and of questionable forms proving frequent and troublesome stumbling-blocks in his way. He has, however, brought together a large amount of information bearing on the subject in hand, which, aside from its intrinsic interest, will be a valuable aid to any investigator desirous of pursuing the subject further.

After sifting the available evidence, he reaches the conclusion (p. 442) that the authentic instances of crossing in a state of nature between birds of unquestioned specific distinctness number only 24, many of which are between species commonly referred to distinct genera. Among types which he considers merely races or varieties of the same species he adduces 20 cases, to which he adds 7 others he thinks should be entered in the same category. He cites 34 additional alleged cases where to him the evidence is not, for one reason or another, wholly satisfactory. His work is well worthy of careful examination by those especially interested in the subject of hybridity. Unfortunately the text is greatly marred by incorrect spelling of personal and geographical names, to such an extent indeed as to give the effect of careless composition and a generally unscholarly appearance.—J. A. A.

Minor Ornithological Publications.—

American Field.

'The American Field' was last noticed here in Vol. VIII, pp. 387–392, where the record was carried through Vol. XXXIV. Since then it has not contained much ornithology, the only contributions worthy of mention in Vols. XXXV–XXXVII (Jan., 1891,–June, 1892) being the following (Nos. 2452–2465).

2452. *Birds Observed in Alabama.* By W. C. A[very]. 'American Field,' **Vol. XXXV**, No. 1, Jan. 3, 1891, p. 8; No. 2, Jan. 10, 1891, p. 32; No. 3, Jan. 17, 1891, p. 55. — An interesting 'local list.' For the previous parts of the paper see Auk, VIII, 392, No. 2111.

2453. *Days with the Waterfowl of America.* By Dr. F. Henry Yorke. *Ibid.*, No. 2, Jan. 10, 1891, pp. 25–27, No. 3, Jan. 17, 1891, pp. 49–51, No. 4, Jan. 24, 1891, pp. 73–74, No. 5, Jan. 31, 1891, pp. 97–99, [*Anas discors*]; No. 6, Feb. 7, 1891, pp. 121–123, No. 7, Feb. 14, 1891, pp. 145–147, [*Anas boschas*]; No. 8, Feb. 21, 1891, pp. 169–171 [*Anas boschas, Grus mexicana, Botaurus lentiginosus*]; No. 9, Feb. 28, 1891, pp. 193–195, No. 10, March 7, 1891, pp. 217-219, No. 11, March 14, 1891, pp. 245–247, [*Anas boschas*]; No. 12, March 21, 1891, pp. 269–271, No. 13, March 28, 1891, pp. 293–295,

[American Field.—Continued.]

[*Aythya marila nearctica et al.*]; No. 14, April 4, 1891, pp. 317–319, No. 15, April 11, 1891, pp. 341–343, [*Dafila acuta*]; No. 16, April 18, 1891, pp. 365–367, No. 17, April 25, 1891, pp. 389–391, [*Aythya americana*]; No. 18, May 2, 1891, pp. 413-415 [*Aythya collaris*]; No. 19, May 9, 1891, pp. 453–455 [*Aythya vallisneria*]; No. 20, May 16, 1891, pp. 485–487, No. 21, May 23, 1891, pp. 509–511, [*Aix sponsa*]; No. 22, May 30, 1891, pp. 533–535 [*Anas carolinensis*]; No. 23, June 6, 1891, pp. 561–563 [*Anser albifrons gambeli* and *Chen hyperborea*]; No. 24, June 13, 1891, pp. 589–591, No. 25, June 20, 1891, pp. 613–615, [*Branta canadensis*]; No. 26, June 27, 1891, pp. 641–643 [*Branta canadensis*, *Olor columbianus* and *O. buccinator*]. — Narratives of duck-shooting, containing considerable information upon the habits of the species above noted. See Nos. 2459 and 2460.

2454. [*Self-domestication of Colinus virginianus*]. By Kaiser. *Ibid.*, No. 3, Jan. 17, 1891, p. 55.

2455. *The Need of a More Thorough Study of the Muscular System in Birds.* By R. W. Shufeldt. *Ibid.*, No. 5, Jan. 31, 1891, p. 104.

2456. *The American Swan.* By John Dean Caton. *Ibid.*, No. 7, Feb. 14, 1891, pp. 150–151. — *Olor columbianus* and *O. buccinator.*

2457. *American Swans.* By Thos. G. Farrell. *Ibid.*, No. 12, March 21, 1891, pp. 274–275.

2458. *A Long-ago Visit to Lake De Smet.* By R. W. Shufeldt. *Ibid.*, No. 13, March 28, 1891, pp. 299–300. — In Wyoming. Various birds mentioned.

2459. Dr. Yorke's Articles. Editorial. *Ibid.*, Vol. XXXVI, No. 2, July 11, 1891, p. 25. — Critical of No. 2453. See also No. 2460.

2460. Dr. Yorke's Letters. By Thos. G. Farrell. *Ibid.*, p. 27.

2461. [Habits of *Gallinago delicata*]. By Naumkeag. *Ibid.*, p. 31.

2462. [*Colinus virginianus* breeding in domestication.] By W. N. Waller. *Ibid.*

2463. [Connecticut shore birds.] By A. W. J. *Ibid.*, No. 7, Aug. 15, 1891, p. 151. — *Totanus flavipes*, *Charadrius dominicus* and *Numenius hudsonicus.*

2464. Hatching and Rearing Quails in Captivity. *Ibid.*, No. 11, Sept. 12, 1891, p. 250. — From the Philadelphia 'Public Ledger.'

2465. How Snipes Rise. By Dace. *Ibid.*, No. 21, Nov. 21, 1891, p. 494. — *Gallinago delicata.*

Forest and Stream.

The last notice of 'Forest and Stream' was in pages 66–69 of the present volume. In Vols. XXXVII and XXXVIII (July, 1891,–June, 1892) are the following (Nos. 2466–2517).

2466. *Those Grouse Chicks.* By Jay Beebe. 'Forest and Stream,' Vol. XXXVII, No. 1, July 23, 1891, p. 4. — *Bonasa umbellus.*

2467. *The Carolina Paroquet.* By Frank M. Chapman. *Ibid.*, No. 3, Aug. 6, 1891, p. 44. — Request for information concerning it.

[**Forest and Stream.**—Continued.]

2468. *Leaves from a Note-book.* By Shoshone. *Ibid.*, No. 4, Aug. 13, 1891, pp. 63–64. — Notes on *Dendragapus obscurus* and *Anas boschas.*

2469. *Carolina Paroquet.* By Theodore Gordon. *Ibid.*, p. 64.

2470. *Rearing Quail in Confinement.* By O. O. S. *Ibid.*, No. 5, Aug. 20, 1891, p. 83.

2471. *Pennsylvania Notes.* By W. *Ibid.* — Birds breeding at Kane, McKean Co.

2472. *Rearing Game Birds.* By M. B., Hugh D. Auchincloss, Ernest E. Thompson, *et al.* *Ibid.*, No. 7, Sept. 3, 1891, pp. 123–124. — Golden Pheasant, Mongolian Pheasant, Sharp-tailed Grouse, Bob-white, and other species.

2473. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, p. 126.

2474. *Chen rossii in Montana.* By George Bird Grinnell. *Ibid.*, No. 8, Sept. 10, 1891, p. 144.

2475. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, No. 9, Sept. 17, 1891, p. 163.

2476. *Pennsylvania Bird Notes.* By W. *Ibid.*, No. 10, Sept. 24, 1891, pp. 182–183. — *Thryothorus bewickii* and *Corvus c. principalis*, among other species.

2477. *Late Birds' Nests.* By D. W. D. *Ibid.*, p. 183. — *Colinus virginianus.*

2478. *The Carolina Paroquet in Florida.* By John M. McCrary and August Koch. *Ibid.*

2479. *Notes from the Game Fields.* By T. H. B[ean?] *et al.* *Ibid.* — Notes *Oidemia deglandi* and *Ectopistes migratorius* summering at Wood's Holl, Mass.

2480. *Fishing with Trained Cormorants.* By F. S. Dugmore. *Ibid.*, p. 186; No. 11, Oct. 1, 1891, p. 208; No. 12, Oct. 8, 1891, pp. 231–232; No. 13, Oct. 15, 1891, p. 252.

2481. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, No. 11, Oct. 1, 1891, p. 207.

2482. *Birds of the Chehalis Forests.* By Robert H. Lawrence. *Ibid.*, No. 13, Oct. 15, 1891, p. 247. — In western Washington.

2483. *Ways of the Ruffed Grouse.* By E. W. L. and Dorp. *Ibid.*

2484. *A Virginia Rail in New York City.* By Spencer Aldrich. *Ibid.*

2485. *Stalking of the Drumming Grouse.* By F. G. H. *Ibid.*

2486. [*Notes from Cando, N. D.*] By E. T. Judd. *Ibid.*, p. 250. — Migration of Snow, Hutchins's, and Canada, Geese.

2487. *Some New Varieties of Bird Song.* By Julia M. Hooper. *Ibid.*, No. 14, Oct. 22, 1891, p. 268.

2488. *A Nesting Woodcock.* By H. E. P. *Ibid.*

2489. *The Antics of a Tame Jay.* By D. W. D. *Ibid.*, No. 16, Nov. 5, 1891, p. 307.

2490. *Nest of Ruby-crowned Kinglet.* By H. Austen. *Ibid.*, No. 19, Nov. 26, 1891, p. 368.

[**Forest and Stream**.—Continued.]

2491. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, No. 20, Dec. 3, 1891, p. 390.

2492. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, No. 21, Dec. 10, 1891, p. 410.

2493. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, No. 22, Dec. 17, 1891, p. 426.

2494. [*Ways of the Grouse.*] By Dorp. *Ibid.*, No. 24, Dec. 31, 1891, p. 469.

2495. *Wildfowl at Cohasset.* By E. H. Clark. *Ibid.*, Vol. XXXVII, No. 1, Jan. 7, 1892, p. 9.

2496. *Gambel's Partridge* By Chas. E. Bendire. *Ibid.*, No. 2, Jan. 14, 1892, p. 27.

2497. *The Summer Roosts of Birds.* By Hermit. *Ibid.*, No. 3, Jan. 21, 1892, p. 52.

2498. *Shore Birds near Toronto.* By C. W. Nash. *Ibid.*, No. 4, Jan. 28, 1892, p. 77. — An annotated list of 31 species.

2499. *The Bald Eagle.* By Chas. E. Bendire. *Ibid.*, No. 8, Feb. 25, 1892, p. 172.

2500. *Wild Geese in Winter.* By Annie E. Preston and the editor. *Ibid.*, No. 9, March 3, 1892, p. 196.

2501. *The Instinct of the Cowbird.* By M. A. Walton. *Ibid.*, No. 12, March 24, 1892, pp. 271–272.

2502. *Tamed Hummingbirds.* By Julia M. Hooper. *Ibid.*, p. 272. — *Trochilus colubris.*

2503. *The Brown Pelican.* By Morris Gibbs. *Ibid.*, No. 13, March 31, 1892, p. 296.

2504. *The Ousel in Oregon.* By O. O. S. *Ibid.*, No. 14, April 7, 1892, p. 319.

2505. *Birds in Central New Brunswick.* By W. H. Moore. *Ibid.* — Near Scotch Lake.

2506. *Seen From My Window.* By Immer Dein. *Ibid.*, p. 320.— Winter birds at Comox, British Columbia.

2507. *Chickens Using Among Cattle.* By Charles Hallock. *Ibid* — *Tympanuchus americanus.*

2508. *Spring Weather in the Adirondacks.* By R. S. Spears. *Ibid.*, p. 324. — Spring arrivals at Northwood, N. Y.

2509. *Taming Hummingbirds.* By Didymus. *Ibid.*, No. 15, April 14, 1892, p. 348. — *Trochilus colubris.*

2510. *Young Woodcock in March.* By Charles Hallock. *Ibid.* — In North Carolina.

2511. *The White Swan.* By Pigarth and the editor. *Ibid.*, No. 16, April 21, 1892, p. 372. — *Olor columbianus* at Harrisburg, Penn.

2512. *The Water Ousel.* By S. H. Greene. *Ibid.*, No. 17, April 28, 1892, p. 395.

2513. *Wild Pigeons.* By Taxi. *Ibid.*, No. 18, May 5, 1892, p. 418. — At Larimore, N. D.

[**Forest and Stream.**—Continued.]

2514. *Massachusetts Sharptail Grouse.* By Newton Dexter. *Ibid.*, No. 22, June 2, 1892, p. 517. — Contains a note on *Phalaropus lobatus.*

2515. *Ways of the Ruffed Grouse.* By Dorp. *Ibid.*, p. 520.

2516. *Prot[h]onotary Warbler in Massachusetts.* By C. E. B. *Ibid.*, No. 24, June 16, 1892, p. 562.

2517. *Butcher Birds and Hawks.* By Didymus. *Ibid.*, No. 25, June 23, 1892, p. 588. — *Lanius ludovicianus.* — C. F. B.

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GENERAL NOTES.

Habits of the Herring Gull. — In Mr. G. H. Mackay's very interesting article on the Herring Gull, in the July number of 'The Auk', he states that it is with some hesitation that he regards them as gregarious, for they apparently only come together when there is some particular reason for so doing, and not because they *like* to. My own impression was just the reverse of this, but I must admit that my observations have been made but casually, and that I have not observed the Gulls with the care that Mr. Mackay has devoted to the subject. I should have said that Gulls scattered in search of food at high water, but came together sociably at other times.

At Plymouth, Mass., it used to be no uncommon sight to see the greater part of the Gulls in the neighborhood gathered in one vast flock on the outer side of the long sand spit, known as the 'Beach.' This, if my memory serves me aright, usually took place some little time after low water. The Gulls were not feeding, but resting and preening their feathers, and, unless disturbed by man, they would remain until driven away by the advancing tide.

At high water the Gulls were widely scattered, searching for floating food, and as the flats in the harbor were left bare by the receding tide the Gulls would gather here and there in small flocks looking for food. At

nightfall the Gulls seemed to fly in one direction.— northward,—as if they roosted together, and when low water came at night, they might be heard at intervals calling from the flats. At Mingan and Percé the Herring Gull breeds in colonies, and here, too, their querulous cries might be heard at all times throughout the night.

The term "wary and observing bird" is applicable to most Gulls, even where they are not especially sought after. In Valparaiso harbor, where the rules of the port prohibit the firing of guns, *Larus dominicanus* was extremely tame, feeding about the vessels and frequently alighting on their jib-booms. Just without the harbor they were shy and vigilant. Here, too, the greater part of the Gulls departed toward nightfall in one direction, apparently for the purpose of roosting together, sometimes leaving in flocks of fifty or more. — F. A. LUCAS, *Washington, D. C.*

Another Specimen of the Labrador Duck. — As an addition to Mr. Dutcher's list of specimens of *Camptolaimus labradorius* present in other collections (see 'The Auk, 1891, p. 201), I beg to state that the Dresden Museum possesses a female example, as to the history of which, however, I am only able to say that it was in Dresden before the year 1850 when Reichenbach published a figure of it in his 'Handbuch der speciellen Ornithologie: Natatores.' It has all the appearance of an antique specimen, and, that it is so, is further shown by the handwriting on the old label, according to which it came from Labrador. — A. B. MEYER, M. D., *Dresden, Saxony.*

Ereunetes occidentalis in Connecticut. — Mr. C. C. Hamner, while collecting shore birds with me at Lyme, Conn., Sept. 4, 1889, shot three birds of this species. There were six of them in all, and they were quite noticeable among the *Ereunetes pusillus* with which they were associated, on account of their longer bill. These birds were kindly identified by Dr. J. A. Allen, and are now in the collection of Mr. John H. Sage, Portland, Conn. — WILLARD E. TREAT. *East Hartford, Conn.*

Totanus flavipes and Charadrius dominicus. — Mr. William S. Kimball of Rochester, N. Y., informs me that while shooting at Martin's Point, near Swan Island, North Carolina, he noted a large migration o the Smaller Yellowleg passing south on August 29, 1892. On the same date he shot two American Golden Plover, and later in the day another, all that he saw. The wind was southeast with drizzling rain. — GEORGE H. MACKAY, *Nantucket, Mass.*

Tryngites subruficollis—I have met with and taken but few Buff-breasted Sandpipers in my shooting experience on the Massachusetts coast; my record shows but eleven during the last seventeen years, all of them having been shot on the island of Nantucket. Six of these were taken on

Sept. 8, 1875; one on Aug. 26, 1879; one on Aug. 28, and one on Sept. 1, 1886; one on Sept. 5, 1892. I am consequently inclined to regard them as not very abundant in the above locality. Of the few which I have seen I have remarked their extreme gentleness and desire to be in company with other birds. On one occasion I had one alight among my Plover decoys on the upland (which they seem very fond of frequenting) and, not wishing to shoot it, I allowed it to remain for quite a while so I could watch it. During this time it moved about with unconcern, apparently not being aware that its supposed companions were of wood. It seemed so gentle that I determined to see how near it would permit me to approach, and it was not over five or six feet from me when it flew away, but only for a short time, however, for it returned and alighted in the course of ten or fifteen minutes. Having no desire to shoot it, I allowed it to remain until it departed not to return. All the birds that I have seen come immediately to the decoys on perceiving them, and alight without hesitation or fear. Their flight is rapid, with many turns and zigzag movements, and near the ground, constantly turning up so as to show their entire under parts.

They vary greatly in size, so much so that, speaking from memory, I should say some of those I have recorded were nearly two thirds larger than others I think the plumage of the younger birds is rather lighter colored all over than the adults'. I have never observed more than seven or eight birds in a flock, and then only once. With their noticeable, clean-cut outline, and peculiarly soft, blended plumage, they are one of our most graceful and attractive Sandpipers.—GEGRGE W. MACKAY, *Nantucket, Mass.*

A Specimen of Numenius arquatus Said to have been Taken on Long Island, N. Y. — The collection of the New York State Museum contains a specimen of Curlew labelled "*Numenius longirostris*, Long-billed Curlew, male, taken on Long Island in 1853." The specimen proves to be a European Curlew (*Numenius arquatus*). Mr. William Dutcher has compared the specimen with specimens of *Numenius arquatus* in the American Museum of Natural History in New York City, and says there is not the slightest doubt that the bird belongs to that species. This being the case, the statement on the label that the bird was taken on Long Island becomes an interesting one. Mr. Brewster, Mr. Ridgway and Dr. Merriam inform me that, so far as they know, the species has never been ecorded as occurring in an American locality.

The annual reports of the New York State Museum (or Cabinet) record but three specimens of Long-billed Curlew, *Numenius longirostris*, as having been received into the State collection. viz., one specimen (without data of any kind) recorded in the 1st Report, p. 17, 1848; one male, recorded as part of the De Rham collection, 4th Report, p. 36, 1851; one male, recorded in the 7th Report, p. 17, 1854. This last specimen was received in 1853 as it is recorded in "Appendix A. Catalogue of the quad-

rupeds, birds, reptiles, amphibians, fishes, etc., added to the State Cabinet of Natural History, from January 1st, 1853, to January 1st, 1854."

At the present day there are three specimens in the State collection labelled "*Numenius longirostris*, Long-billed Curlew," viz., one without data of any kind — corresponding in this respect to the entry in the 1st Report; one in the De Rham collection, marked "male" — corresponding to the entry in the 4th Report; the third is the specimen of *Numenius arquatus* under consideration, and is labelled "Male, taken on Long Island in 1853" — corresponding *in sex and date* to the entry in the 7th Report. The report contains no record of the locality in which the specimen was taken. The writer does not consider this ommision as of any importance except that it may be looked upon as in a measure supporting the supposition that the bird came from some locality within the State of New York. The older Reports of the State Cabinet do not contain records of localities for animals, except when the occurrence of a species in a certain locality was considered remarkable. The Reports give evidence that the specimen of *Numenius arquatus* was believed to be the common Long-billed Curlew (*Numenius longirostris*) known to occur more or less plentifully within the State, so that the locality in which the specimen was taken was not thought worthy of remark.

The writing on the label is apparently very old, and is in the hand of the late John Gebhard, who was curator of the State Cabinet at the time the bird was received. Mr. Gebhard was in the employ of the institution at the time of his death in 1887, in the capacity of guide; and was believed to be familiar with the history of most of the zoölogical specimens. About ten years ago the birds and their labels were marked with corresponding numbers. The work was done by Mr. Martin Sheehy, who is still in the employ of the museum, and at a time when Mr. Gebhard was connected with the institution. On account of the position which he held — that of guide — Mr. Gebhard's eyes were upon the collection almost every day. Under such circumstances it is hardly possible that there could have been any confusion of labels without attracting his attention. — WM. B. MARSHALL, *New York State Museum, Albany, N. Y.*

The above notes were read at the last Congress of the American Ornithologists' Union, November, 1891, and the specimen in question also was exhibited. The identity of the specimen being beyond question, the only other point to be decided is, whether the claim that it was taken in North America is well founded. In addition to the facts submitted above by Mr. Marshall, he also found in the Comptroller's Office in Albany, a bill made by James A. Hurst, dated June 8, 1853, for certain specimens of mammals, birds, etc., among which is this item, "Long-billed Curlue, male, very fine, $5.00." Mr. Hurst who sold this specimen to the State Museum was in the employ of the State Cabinet at the date of the bill and for many years afterward in the capacity of taxidermist. It is evident neither Mr. Gebhard, the curator, nor Mr. Hurst, the taxidermist, were aware that the specimen added to the collection at that time was the European

Curlew, as they labelled it 'Long-billed Curlew.' If they had been acquainted with its identity, it is fair to assume they would have labelled it correctly, from the greater interest that would have been attached. We can also assume with certainty that Mr. Gebhard, in whose handwriting the label is, when the specimen was purchased, asked the taxidermist, Mr. Hurst, the locality the bird came from, and at the time when the fact was fresh in the mind of Mr. Hurst the locality 'Long Island' was added to the record. Mr. Hurst could have had no object in substituting a specimen of the European Curlew for our own form in the New York State collection, as a specimen of the Long-billed Curlew would be much easier to obtain, and further, the cost of a specimen of the European form would have been much greater. That he could have made the substitution knowingly is out of the question, as he was a man of the utmost probity of character and one whose statements could be depended upon implicitly. To further substantiate the fact that this specimen was taken in America it was submitted to Mr. William Palmer, taxidermist of the National Museum, Washington, D. C., and Mr. Jenness Richardson, taxidermist of the American Museum of Natural History, New York, who were present at the Congress, and they without hesitation, after examination, pronounced the specimen to have been mounted from a bird freshly killed and not from a dried skin. —Wm. Dutcher, *New York City.*

Notes on Syrnium occidentale. —Some fifty miles N. N. E. of San Diego Bay is a mountain known locally as Smith Mountain, or sometimes as Mt Palomar. It is the culmination of a broken, mountainous region, rising to an altitude of perhaps 6,000 feet, though some distance to the north and southeast are higher peaks. On the mountain are a number of small valleys which are often partially bordered by heavy forests of fir, cedar and oak, especially on the northern slopes.

Last June a small party of us spent a few days on Smith Mountain, selecting one of the smaller uninhabited valleys as our camp ground. The first night there two ladies of the party who, unaccustomed to camping out, were kept awake by sounds that they thought were made by a fox or an Owl, they could not tell which. I had heard the note of an Owl during the night, but sleepily decided that it was the Great Horned Owl. The next night I did not sleep so soundly, and heard the sounds distinctly and knew that I was listening to a bird note new to me. From the sounds made I thought that there was a pair of the birds as one set of notes was deeper than the other. We were camped at the base of a very steep slope at the mouth of a little gulch. The Owls appeared to be up toward the head of the gulch. In the morning I explored the locality from which the sounds came, and found among the large trees a dense growth of small firs and cedars of a quarter of an acre or so in extent which I thought was where the Owls probably were. Before dark I took my stand at the lower edge of the thicket and soon heard the hissing note of a young Owl, apparently calling for food. I was cautiously working my way up the steep

mountainside, when the young bird flew out toward me and lit on the dead branch of a cedar in short range. I fired and it fell, catching a branch below and hanging suspended by one foot just out of my reach. While hunting a stick to pull it down with, a *hoo* sounded close at hand, and one of the parents, carrying something in its claws, passed over my head and lit on the same branch from which I had just dropped the young bird. It was awfully short range, but a rare bird badly shot up is better than no specimen. Fortunately my shot did not damage it as badly as I had feared. There was light enough yet for me to see that I held in my hand my first Spotted Owl (*Syrnium occidentale*). By feeling around in the twigs and leaves I found the object it had carried in its claws; this proved to be a wood rat (*Neotoma fuscipes*) with head wanting, and cold, so it evidently had been caught the previous night and kept for later use.

Toward morning I heard the other Owl, and early the next evening I started for my post again, but before reaching it I heard the call of the Owl. I soon found and shot him. During the remainder of our stay we heard no more sounds of either young or adult of this species.

The ordinary notes heard were a succession of three syllables, alike in tone and volume, the first followed quickly by the second and then a pause of considerable lengt hbefore the third — *hoo, hoo, — hoo.* The other series of notes is different and has a curious canine quality of tone; they were usually four, uttered rather rapidly, becoming emphatic toward the end, and may be represented by the formula: *oh, oo, ou, ow.*

The altitude of the place where I shot the Owls is about 5,000 feet, and the heavily timbered mountainside faces the north, so it is cool and shady. From my brief experience with the species I should think that the Spotted Owl, like its eastern congener the Barred Owl, is abroad earlier in the evening and later in the morning than the Great Horned Owl. How similar the notes are to the Barred Owl's I cannot say, as it is so many years since I heard the Barred Owl that I have forgotten its note. — F. STEPHENS, *Santa Ysabel, Cala.*

Coccyzus americanus occidentalis in Washington. — On July 8, 1892, I saw and positively identified a California Cuckoo (*Coccyzus americanus occidentalis*) at Ridgefield, Clarke County, Washington. The bird, an adult, and probably a female, flew out from a strip of small firs, and took a low perch on the edge of the woods, about twenty-five feet from where I was standing. It stayed some time, preening its feathers. The night of July 9 — a bright moonlit one — I heard the *kuck, kuck* of a Cuckoo coming from the treetops of this grove of small firs. The note was rapidly given four or five times in succession; and the call several times repeated. The call was not rolled out to such length as that of the bird given in my Gray's Harbor List (Auk, Jan., 1892).

On July 18, my cousin, Mr. Harold L. Gilbert of Portland, Oregon, was attracted to this same spot by the birds' calls, and discovered a family of five — two adults and three youngsters. He shot the adults and one young

bird. The other young escaped. On July 19 Mr. Gilbert caught one of these young birds alive. It lived through the day, probably dying from starvation, as enough caterpillars could not be found for it. The adult female measured 18 inches in extent and 13 inches in length. Its stomach, Mr. Gilbert says, contained the remains of caterpillars. This is, I believe, the first record of the capture of this species in Washington. — R. H. LAWRENCE, *Portland, Oregon.*

Original Description of Lewis's Woodpecker. — This is found in the 'Journal' of Patrick Gass (12 mo., Pittsburgh, 1807, p., 224); consequently four years before it was named *Picus torquatus* by Wilson (Am. Orn. III, 1811, p. 31, pl. 20, fig. 3), and seven years before Lewis and Clarke's own notice (Hist. of the Exped., 1st Am. ed., II, 1814, p. 187). Gass was the famous Irish Sergeant of the Expedition of 1804–'6; his 'Journal' notices many of the mammals and birds which we are in the habit of supposing to have been first described in the narrative of his commanding officers which did not appear till seven years after his own book. The 'Journal' went through at least four American (1807, 1810, 1811, 1812) editions, and an English one (1808). All the American editions were identical (pp. i–viii, 9–262) and may be cited by pages indifferently. Gass describes the bird thus: " . . . and woodpeckers of a different kind from any I had ever seen before. They are about the size of the common red-headed woodpecker; but are all black except the belly and neck, where the ends of the feathers are tipped with a deep red but this tipping extends to so short a distance on the feathers that at a distance the bird looks wholly black." The locality is the headwaters of Clearwater River, in the Bitter Root Mountains, Idaho; the date of entry in the Journal is June 12, 1806. — ELLIOTT COUES, *Cranberry, N. C.*

Myiarchus nuttingi in Arizona.—During a recent trip through southern Arizona, Mr. J. Alden Loring and the writer had occasion to stop at Tucson for a few days. The objective point near that place was Rillito Creek, which lies a few miles north of the town and which is, except during the rainy season, a dry wash. It was visited on June 12, 1892, through the kindness of Mr. Herbert Brown who, besides showing many other favors, devoted the entire day to driving about among the groves of mesquit and giant cactus, so we might collect what specimens we wanted. While thus occupied we flushed a Flycatcher from an old Woodpecker's hole in a giant cactus, and secured it, together with four fresh eggs.

On comparing the specimen with the type in the National Museum it proved to be *Myiarchus nuttingi*, a small southern representative of *M. cinerascens*, a species not yet recorded from the United States. Subsequently Mr. Loring took another female at Prescott, Arizona, on June 22, and in the Department of Agriculture Collection there is still another female specimen taken by Mr. Vernon Bailey, at Oracle, Arizona, June 15, 1889. It would seem, therefore, that the species is not rare in portions of Arizona.—A. K. FISHER, *Washington, D. C.*

Perisoreus canadensis in Massachusetts. — While on Mount Graylock, in Berkshire County, Massachusetts, June 18, 1892, Mr. Wm. W. Colburn and myself observed the presence of a Canada Jay. — ROBERT O. MORRIS, *Springfield, Mass.*

Up to Date. — My friend, Mr. Wood, tells me that on two occasions he has seen the English Sparrow catching insects at night about an electric light and carrying them to her young; while the chirping of the young in other nests indicated that they, too, were accustomed to being fed at night. Raising vegetables by electric light may be a good thing, but raising English Sparrows in this manner is of more than doubtful utility. — F. A. LUCAS, *Washington, D. C.*

Abnormal Eggs of Spizella socialis. — On July 4, 1892, at Lake Grove, Long Island, New York, I secured a remarkable set of four eggs of the Chipping Sparrow (*Spizella socialis*). Instead of the normal greenish blue, the ground color of the eggs is a dirty or greenish *white;* they are thickly specked, spotted and blotched all over, more thickly at the larger end, where the spots become confluent, with dark russet-brown and a few faint blotches of lavender. Their average size, .73 × .55 inch, is slightly greater than the average of six sets in my collection, which is .68 × .53 inch. Their shape is rather more pointed than is usual in eggs of this species, yet they can be quite closely matched, both in shape and size, by eggs from my collection. They were nearly hatched. I saw the bird on the nest on four or five different occasions, as I wished to fully satisfy myself of the identity of the eggs. — ARTHUR H. HOWELL, *Brooklyn, N. Y.*

Vireo olivaceus in British Columbia and Washington. — Mr. Chapman's recent record (Bull. Amer. Mus. Nat. Hist., N. Y., Vol. III, 1890, p. 149) of the presence of the Red-eyed Vireo at Ducks and Ashcroft, British Columbia, was the first intimation that has been given of this bird's occurrence anywhere west of the Rocky Mountains; and though the western limit of its known range was thus greatly extended, it remained a doubtful question whether the species was to be found throughout the intermediate country, or whether these localities might not be isolated, outlying portions of its habitat. The latter view seems improbable in the light of the facts I have now to record.

On July 27 and 28, 1891, I made a trip on a small steamboat from Golden, B. C., a little town on the Canadian Pacific Railway, up the Columbia River to its source in Lake Windermere, about a hundred miles southeast of Golden, and on the 29th I returned by the same route. The deck of a moving steamboat is not the most favorable point from which to observe the small birds on the river's bank, yet on the way up I heard five Red-eyes singing, and on the return trip I noted nine. Several of them I was able to see satisfactorily. This upper reach of the Columbia, lying in a narrow valley between the Rockies and the Selkirks, is about a hundred and fifty miles east of Ducks.

Again a few days later (Aug. 4), several, hundred miles farther down the Columbia, at the Little Dalles, Washington I heard a Red-eye singing in some large trees at the edge of the river. This latter place is nearly two hundred miles to the south of Golden and about the same distance south-east of Ashcroft.

These facts make it seem at least probable that the species will be found in all favorable situations throughout the intermediate region.—C. F. BATCHELDER, *Cambridge, Mass.*

The Chestnut-sided Warbler Nesting in Missouri. — Central Illinois is generally considered to be the southernmost limit in the Mississippi Valley of the summer home of this Warbler, and thus far there appears to be no record for southern Iowa. I desire to say, however, that while in Missouri the past June (1892) I observed *D. pensylvanica* on two occasions and under circumstances that point most conclusively to the probability of its nesting in that State. On June 3, while visiting the woods skirting the River Des Peres near St. Louis, in company with Mr. O. Widmann of Old Orchard, Mo., a male was discovered singing in the top of a tree on the edge of a blackberry thicket and to all appearances settled for the season, Mr. Widmann's attention being first directed to it by the peculiarity of its song as a summer resident for that locality.

Later, on the 19th of the month, while riding by wagon in Reynolds County, Mo., from Edge Hill to Middlebrook, and about half way between those points a male and a female were detected by me in the act of copulation, the locality being a tract of country formerly cleared of its timber by charcoal burners, but now growing up with brush. This was in a region about ninety miles south by southwest from St. Louis. Mr. Widmann again saw a male (probably the original bird) in the first locality herein mentioned on June 21, and we were informed by Mr. Philo W. Smith, Jr., of St. Louis, that he had taken as many as six nests of the Chestnut-sided Warbler in one day at Greenwood, a small suburb a few miles west of the city.

In the light of our previous knowledge, the foregoing notes will serve to extend considerably the known breeding range of this bird. — B. F. GAULT, *Glen Ellyn, Du Page Co., Illinois.*

Two Cape Cod Records. — **Rallus elegans.** — Mr. P. L. Small of Provincetown, Mass., has presented me with the remains of a King Rail that was caught in a muskrat trap in North Truro early in February, 1892. The skin has been badly damaged by mice, but enough is left unhurt to make the identification certain. Mr. Small received the bird in the flesh a few days after it was taken. The early part of the winter of 1891–1892 was very mild in eastern Massachusetts, and I am told that until the middle of February there was no ice in the marshes where the Rail was captured.

Cathartes aura. — During the latter part of June, 1892, while spending a few days at North Truro, I was told that a Portuguese family in the village had a living 'Bald Eagle' which they had caught slightly wounded. My informant assured me that the bird must be a Bald Eagle, for he had seen it and had noticed particularly that it had no feathers on its head. On looking into the matter I found, as I expected, a Turkey Buzzard. The bird had been caught near the boundary line between North Truro and Provincetown about June 20, but refused all food and died the night before my visit (June 26). It proved to be an adult male in good plumage, but had evidently received a charge of No. 8 shot, nearly a dozen of which were lodged in various parts of the body. — GERRIT S. MILLER, JR., *Cambridge, Mass.*

Notes on a Few Birds from Northern Ohio. — These notes are presented as being supplementary in some degree to Dr. Wheaton's admirable report in Vol. IV of the Ohio State Geological Survey, to which the reader is referred for the previous history of these birds in this region.

Glaucionetta islandica. — An adult female was brought to me by Mr. Warden of Lorain, Ohio, March 30, 1892.

Clangula hyemalis. — In December, 1891, a large flock of these Ducks stayed for a time near Lorain, and numbers were entangled and drowned in the gill-nets that are set in about fifty-four feet of water. One fish-boat brought in twenty-seven taken in this way in one day.

Oidemia deglandi. — Three, two males and a female, were brought to me May 11, 1892, that had been taken in Mr. Warden's gill-nets near Lorain.

Ardea cœrulea. — There is a fine specimen of this bird in spring plumage in Mr. Jump's collection, that was taken near Oberlin about ten years ago.

Tringa canutus. — I have two records of this 'maritime' species, one based on a head that I picked up on the shore of Lake Erie in October, 1890, the other on a bird killed by Mr. Harry Warden, of Lorain, and presented to Oberlin College, Sept., 1891.

Tringa bairdii. — I took several specimens Aug. 30, 1890, near Lorain, and have seen them at other times. I do not think it can be classed as 'rare.'

Loxia leucoptera. — Prof. J. T. Shaw identified as this species a bird that his cat brought in on April 10, 1892. The specimen was thoroughly examined, but unfortunately was not preserved.

Chondestes grammacus. — I noticed this bird for the first time this year (1892), when I found two pairs building nests near Oberlin.

Helminthophila celata. — Mr. G. D. Wilder took a specimen of this western species near Oberlin May 11, 1892.

Dendroica palmarum hypochrysea. — Mr. G. D. Wilder took a well-marked specimen April 16, 1892, near Oberlin. This is, Mr. Ridgway tells me, the first record for west of the Alleghanies. — L. M. MCCORMICK, *Oberlin, Ohio.*

CORRESPONDENCE.

[*Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.*]

Robert W. Shufeldt, 3d.

To the Editors of The Auk:—

Dear Sirs:—At a recent session of the Faculty of Marietta College the following minute was adopted:—

"It is with a deep sense of personal loss that the Faculty of Marietta College extend heartfelt sympathy to Dr. R. W. Shufeldt and his family in view of their great bereavement in the death of Robert W. Shufeldt, 3d, who for six months has been connected with Marietta Academy as a student and with Marietta College as taxidermist and collector for the Natural History Museum. The Faculty wish to put on record their high estimate of his character and his work. His sudden death by drowning, July 11, 1892, while on an ornithological expedition, has taken from the scientific world an ambitious young scientist of unusual promise. It gives us great pleasure to accept from Dr. R. W. Shufeldt of Takoma Park, D. C., the private ornithological collection of his son in whose memory it shall be preserved in the College Museum as 'The Shufeldt collection."

By order of the Faculty,

T. F. McKenney, *Secretary.*"

Permit me to add a few personal reminiscences of Mr. Robert Shufeldt with whom it was my privilege to work in 'The Marietta Scientific Association,' in the College Museum and in the field. He was a young man well fitted for the work to which he was determined to give his life. I do not remember ever seeing a man so young who had so definitely in mind just what he wanted to make a life work. He eagerly grasped at every opportunity that would assist him in his chosen calling. He was invited to come to Marietta College last January to assist in putting the ornithological collection of the college into shape and, by giving to this work his leisure, to win his own way to a thorough collegiate education. His strong will power induced him to endeavor to abridge the preparatory course by extra study, and he would have succeeded. He entered upon his scientific work with alacrity and in a short time has brought order out of chaos in the Museum. During these few months the collection of birds trebled in size, and as the summer vacation came on we were preparing to do extensive work in the field. Our object was to secure adequate specimens of every object of natural history, within the radius of one hundred miles around Marietta, as a basis for larger collections through gift and exchange. Mr. Shufeldt entered most intelligently aud successfully into the plan and in the end would have become a specialist in this region of the country.

His sudden death, however, has cut short a career of the greatest promise. When news came to Marietta that he was drowned at the head of Kerr Island in the Ohio, just below the dam on the West Virginia side, there was great excitement; several boats started immediately for the scene of the accident and later a large company started for the place in a chartered steamboat. It was the old story of a treacherous hole in the river-bottom, inability to swim, and no one near to help. The remains were taken to Takoma Park, D. C., by Professor David H. Jones, Associate Principal of Marietta Academy. They were laid at rest beside the grave of his mother in the Rock Creek Cemetery near Washington. The Trustees and the Faculty of the College join with the large circle of friends in expressions of deepest sympathy with Dr. Shufeldt and his family. The College hopes by the aid of friends to make 'The Shufeldt Collection' an enduring monument to the brilliant young ornithologist.

Robert W. Shufeldt, Jr., was born on the 7th of June, 1877, at Omaha, Nebraska. He received his scientific training from his father, Dr. R. W. Shufeldt, who is well known to the scientific world as a specialist in ornithology. What is the loss of Dr. Shufeldt is the common loss of us all and especially of American science in the years to come.

Very respectfully yours,

HENRY WOODWARD HULBERT.

Marietta College, July 20, 1892.

NOTES AND NEWS.

DR. HERMANN BURMEISTER, a Corresponding Member of the A. O. U., died at Buenos Ayres May 1, 1891, in his eighty-sixth year, he having been born at Stralsund, Germany, Jan. 15, 1807. He was educated at Greifswald and Halle, and for a time was professor of zoölogy in the University of Halle, succeeding the ornithologist Nitzsch. He was a prominent actor, siding with the 'Liberals,' in the political troubles of 1849-50, and in consequence was obliged to leave Germany. He traveled for some time in Brazil, and though visiting Europe for short intervals on two or three occasions, spent most of his life in South America. He finally settled in Buenos Ayres, where he founded the well-known National Museum of Natural History, of which he was made Director in 1861, and in 1870 became the head of the faculty of science in the University of Cordoba. His writings cover a wide field, his earlier work relating mainly to entomology, but later he wrote many papers and works pertaining to physical geography and vertebrate palæontology and zoölogy. Some years since he met with an accident which made it necessary for him to resign his position as Director, "and the community, by which his services were highly appreciated, took care that he was properly pensioned. He was buried at the cost of the State, and the President was present at his funeral."

Dr. Burmeister was the editor of Nitzsch's 'Pterolographie,' published in 1840, and was the author of a 'Systematische Uebersichte der Thiere Bra-

siliens,' (Halle, 1856), in five volumes, of which two are devoted to birds. He also published a number of special papers on the birds of Brazil and the Argentine Republic.

READERS of 'The Auk' will deeply sympathize with Dr. R. W. Shufeldt in the loss of his son by death from drowning in the Ohio River, near Marietta, Ohio, July 11, 1892, while on a collecting trip for birds for the Museum of Marietta College. The particulars of the sad event are detailed by Professor H. W. Hulbert of Marietta College, in a letter to 'The Auk' published on a preceding page, who pays a high tribute to the worth and memory of this enthusiastic and promising young naturalist.

THE POTOMAC VALLEY ORNITHOLOGICAL CLUB of Washington, D. C. was formally organized on February 1, 1892. The purpose of the Club, as expressed in its constitution, is "the study of ornithology in general, and especially the promotion of a better knowledge of the avifauna of the region within twenty miles of the Capitol at Washington." The following officers were elected: President, William Palmer; Vice-President, F. H. Hitchcock; Secretary, E. M. Hasbrouck. The membership of the Club has increased from nine to twenty-three. Meetings are held on the first and third Mondays of each month, with a recess during July and August.

The following papers have been read: By William Palmer, A two days trip on the Island of St. Paul, Bering Sea; Occurence of *Contopus richardsonii?* in the District of Columbia; Summer Birds of Golden Gate Park, San Francisco, Cal.; Summer Birds of Hanover County, Va. By F. E. L, Beal, Polygamy in the group Passeres; The Usefulness of Seed-Eating Birds. By T. S. Palmer, Remarks on the Birds of Golden Gate Park, San Francisco, Cal. By E. J. Brown, the Summer Birds of Cobb's Island, Va. By W. E. Clyde Todd, The Ruddy Duck in Beaver County, Pa.; The Blue-gray Gnatcatcher. By E. M. Hasbrouck. Remarks upon Dichromatism; The *Helminthophilæ* of the District of Columbia; rare captures in the District of Columbia for 1892.

TWO ADDITIONAL volumes of the British Museum Catalogue of Birds have recently been published, namely, Volumes XVI and XVII. The former contains the Hummingbirds, by Mr. Osbert Salvin, and the Swifts, Goatsuckers, and their allies, by Mr. Ernst Hartert. Volume XVII contains the Rollers, Bee-eaters, Kingfishers, Motmots and Colies, by Mr. R. Bowdler Sharpe, and the Hornbills and Trogons, by Mr. W. Ogilvie Grant. These volumes will be noticed at length in a later issue of this Journal.

THE TENTH CONGRESS of the American Ornithologists' Union will be held in Washington, D. C., beginning Tuesday, November 15, 1892. The meetings will be held at the U. S. National Museum. Members intending to present papers are requested to send the titles of the same to the Secretary, Mr. John H. Sage, Portland, Conn., at least one week prior to the date on which the Congress convenes, in order to facilitate the preparation of a programme of papers to be read before the Congress. A large attendance is anticipated, and papers of special interest will be presented.

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ERRATA.

Page 127, lines 23 and 45, for "PATOO" read "POTOO".
" 205, line 35, for "Great-tailed" read "Boat-tailed."
" 229, " 3, " "*Phaëton*" read "*Phaëthon*".
" 276, " 8, " "*flammeola*" read "*flammea*."
" 294, " 32, " "Hammuck" read "Hummuck."
" " " 33, " "on" read "over."
" 295, transfer the two sentences in lines 35, 36, and 37, beginning, "One May 10," and ending, "flying about," to end of paragraph, line 42.
Page 296, line 23, for "loral space" read "patch."
" 306, " 16, for "northwest" read "northeast."

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